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## **I. STATUS OF CLAIMS**

Claims 1-42 were pending for examination at the time of the office action.

Claims 5, 13-25, 30, 33 and 36 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. *See Examiner's Office Action*, pp. 6-7 (9 December 2009).

Claims 39-42 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. *See Examiner's Office Action*, pp. 8-9 (9 December 2009).

Claims 1, 3-10, 13 and 15-22, 31, 32, 34, 35, 37 and 38 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund et al. (US 2002/0161751 A1) in view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" to Madden et al.. *See Examiner's Office Action*, pp. 8-13 (9 December 2009).

Claims 2, 14 and 39-42 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund et al. and Madden et al. and in further view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. (hereinafter Madden Ref. 2). *See Examiner's Office Action*, pp. 14-16 (9 December 2009).

Claims 11, 12, 23 and 24 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund et al. and Madden et al. and in further view of Regli et al. (US Patent application No. 2005/0141706 A1). *See Examiner's Office Action*, pp. 16-17 (9 December 2009).

Claims 25, 26, 28-30, 33 and 36 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund et al. and Madden et al. and in further view of "A Transmission Control Scheme for Media Access in Sensor Networks" by Alec Woo et al. *See Examiner's Office Action*, pp. 17-21 (9 December 2009).

Claim 27 stands rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund et al. and Madden et al. and in further view of Alec Woo et al. and in further view of Madden Ref. 2. *See Examiner's Office Action*, pp. 22-23 (9 December 2009).

Claims 13, 14-18, and 22-24 are amended.

Claims 1-42 remain pending for examination.



## II. ISSUES TO BE REVIEWED

The issues in this response relate to whether the art of record establishes a *prima facie* case of the unpatentability of Applicant's claims. For reasons set forth elsewhere herein, Applicant respectfully asserts that the art of record does not establish a *prima facie* case of the unpatentability of any pending claim.<sup>1</sup> Accordingly, Applicant respectfully requests that Examiner hold all pending claims allowable for at least the reasons described herein, and issue a Notice of Allowance on same.

## III. ARGUMENT: ART OF RECORD DOES NOT ESTABLISH *PRIMA FACIE* CASE OF UNPATENTABILITY IN VIEW OF CITED ART OF RECORD

Applicant respectfully asserts herein that, under the MPEP and legal standards for patentability as set forth below, the art of record does not establish a *prima facie* case of the unpatentability of Applicant's claims at issue. Specifically, Applicant respectfully shows below that the art of record does not recite the text of Applicant's claims at issue, and hence fails to establish a *prima facie* case of unpatentability. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections and hold claims 1-42 to be allowable over the art of record.

### A. MPEP Standards for Patentability<sup>2</sup>

The MPEP states as follows: "the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to

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<sup>1</sup> Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the Examiner fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. *See, e.g.*, 37 C.F.R. § 10.83 ("A practitioner should represent a client zealously within the bounds of the law."); 37 C.F.R. § 10.84 ("[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part."); and 37 C.F.R. § 10.76 ("A practitioner should represent a client competently."). For these and other reasons, this document notes instances in which the Examiner inadvertently did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the Examiner's behalf.

<sup>2</sup> Applicant is aware that Examiner is familiar with the MPEP standards. Applicant is merely setting forth the MPEP standards to serve as a framework for Applicant's arguments following and to ensure a complete written record is established. Should Examiner disagree with Applicant's characterization of the MPEP standards, Applicant respectfully requests correction.

the applicant. . . If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent.” *MPEP* § 2107 (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)); *In Re Glaug* 283 F.3d 1335, 62 USPQ2d 1151 (Fed. Cir. 2002) (“During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the applicant is entitled to the patent.”). Accordingly, unless and until an examiner presents evidence establishing *prima facie* unpatentability, an applicant is entitled to a patent on all claims presented for examination.

### **1. MPEP Standards for Determining Anticipation**

An examiner bears the initial burden of factually supporting any *prima facie* conclusion of anticipation. *Ex Parte Skinner*, 2 U.S.P.Q.2d 1788, 1788-89 (B.P.A.I. 1986); *In Re King*, 801 F.2d 1324, 231 U.S.P.Q. (BNA) 136 (Fed. Cir. 1986); *MPEP* § 2107 (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992) (“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability....”). Failure of an examiner to meet this burden entitles an applicant to a patent. *Id.* (“[i]f examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent”).

The MPEP indicates that in order for an examiner to establish a *prima facie* case of anticipation of an applicant’s claim, the examiner must first interpret the claim,<sup>3</sup> and thereafter show that the cited prior art discloses the same elements, in the same arrangement, as the elements of the claim which the examiner asserts is anticipated. More specifically, the MPEP states that “[a] claim is anticipated *only if each and every*

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<sup>3</sup> With respect to interpreting a claim at issue, the MPEP directs that, during examination -- as opposed to subsequent to issue -- such claim be interpreted as broadly as the claim terms would reasonably allow, in light of the specification, when read by one skilled in the art with which the claimed invention is most closely connected. *MPEP* § 2111.

*element as set forth in the claim is found*, either expressly or inherently described, in a single prior art reference. . . . The identical invention must be shown in as complete detail as is contained in the . . . claim. . . . The elements must be arranged as required by the claim . . .” *MPEP* § 2131 (emphasis added). Consequently, under the guidelines of the MPEP set forth above, if there is *any* substantial difference between the prior art cited by an examiner and an applicant’s claim which the examiner asserts is rendered anticipated by the prior art, the prior art does NOT establish a *prima facie* case of anticipation and, barring other rejections, the applicant is entitled to a patent on such claim.

## **2. MPEP Standards for Determining Obviousness**

“[T]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.”<sup>4</sup> *MPEP* § 2142. The MPEP indicates that in order for an examiner to establish a *prima facie* case that an invention, as defined by a claim at issue, is obvious, the examiner must (1) interpret the claim at issue; (2) define one or more prior art reference components relevant to the claim at issue; (3) ascertain the differences between the one or more prior art reference components and the elements of the claim at issue; and (4) adduce objective evidence which establishes, under a preponderance of the evidence standard, a teaching to modify the teachings of the prior art reference components such that the prior art reference components can be used to construct a device substantially equivalent to the claim at issue. This last step generally encompasses two sub-steps: (1) adducement of objective evidence teaching how to modify the prior art components to achieve the individual elements of the claim at issue; and (2) adducement of objective evidence teaching how to combine the modified individual components such that the claim at issue, as a whole, is achieved. *MPEP* § 2141; *MPEP* § 2143. Each of these forgoing elements is further defined within the MPEP. *Id.*

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<sup>4</sup> An invention, as embodied in the claims, is rendered obvious if an examiner concludes that although the claimed invention is not identically disclosed or described in a reference, the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *MPEP* § 2141 (citing 35 U.S.C. § 103).

This requirement has been explained recently by the Supreme Court in *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 (2007) which noted that such a rejection requires “some articulated reasoning ... to support the legal conclusion of obviousness.” As stated by the Court, obviousness can be established where “there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, *this analysis should be made explicit.*” (emphasis added). See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’).” *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.

As further described by the Court “[A] *patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.* Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.

#### **a) Interpreting a Claim at Issue**

With respect to interpreting a claim at issue, the MPEP directs that, during examination -- as opposed to subsequent to issue -- such claim be interpreted as broadly as the claim terms would reasonably allow when read by one skilled in the art with which the claimed invention is most closely connected. In practice, this is achieved by giving each of the terms in the claim the “plain meaning” of the terms as such would be understood by those having ordinary skill in the art, and if portions of the claim have no “plain meaning” within the art, or are ambiguous as used in a claim, then the examiner is to consult the specification for clarification. *MPEP* § 2111.

**b) Definition of One or More Prior Art Reference  
Components Relevant to the Claim at Issue**

Once the claim at issue has been properly interpreted, the next step is the definition of one or more prior art reference components (*e.g.*, electrical, mechanical, or other components set forth in a prior art reference) relevant to the properly interpreted claim at issue. With respect to the definition of one or more prior art reference components relevant to the claim at issue, the MPEP defines three proper sources of such prior art reference components, with the further requirement that each such source must have been extant at the time of invention to be considered relevant. These three sources are as follows: patents as defined by 35 U.S.C. § 102, printed publications as defined by 35 U.S.C. § 102, and information (*e.g.*, scientific principles) deemed to be “well known in the art”<sup>5</sup> as defined under 35 U.S.C. § 102. *MPEP* § 2141; *MPEP* § 2144.

**c) Ascertainment of Differences between Prior Art  
Reference Components and Claim at Issue; Teaching to  
Modify and/or Combine Prior Art Reference  
Components to Remedy Those Differences in Order to  
Achieve Recitations of Claim at Issue**

With one or more prior art components so defined and drawn from the proper prior art sources, the differences between the one or more prior art reference components and the elements of the claim at issue are to be ascertained. Thereafter, in order to establish a case of *prima facie* obviousness, an examiner must set forth a rationale, supported by objective evidence<sup>6</sup> sufficient to demonstrate under a preponderance of the evidence standard, that in the prior art extant at the time of invention there was a teaching to modify and/or combine

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<sup>5</sup> The fact that information deemed to be “well known in the art” can serve as a proper source of prior art reference components seems to open the door to subjectivity, but such is not the case. As a remedy to this potential problem, *MPEP* § 2144.03 states that if an examiner asserts that his position is derived from and/or is supported by a teaching or suggestion that is alleged to have been “well known in the art,” and that if an applicant traverses such an assertion (that something was “well known within the art”), the examiner must cite a reference in support of his or her position. The same *MPEP* section also states that when a rejection is based on facts within the personal knowledge of an examiner, the data should be stated as specifically as possible, and the facts must be supported, when called for by the applicant, by an affidavit from the examiner. Such an affidavit is subject to contradiction or explanation by the affidavits of the applicant and other persons. *Id.* Thus, all sources of prior art reference components must be objectively verifiable.

<sup>6</sup> The proper sources of the objective evidence supporting the rationale are the defined proper sources of prior art reference components, discussed above, with the addition of factually similar legal precedent. *MPEP* § 2144.

the one or more prior art reference components to construct a device practicably equivalent to the claim at issue.

The preferable evidence relied upon is an express teaching to modify/combine within the properly defined objectively verifiable sources of prior art. In the absence of such express teaching, an examiner may attempt to establish a rationale to support a finding of such teaching reasoned from, or based upon, express teachings taken from the defined proper sources of such evidence (*i.e.*, properly defined objectively verifiable sources of prior art). *MPEP* § 2144; *In re Dembiczak*, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999).

The MPEP recognizes the pitfalls associated with the tendency to subconsciously use impermissible “hindsight” when an examiner attempts to establish such a rationale. The MPEP has set forth at least two rules to ensure against the likelihood of such impermissible use of hindsight. The first rule is that:

under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical “person of ordinary skill in the art” when the invention was unknown and just before it was made. In view of all factual information,<sup>7</sup> the examiner must then make a determination whether the claimed invention “as a whole” would have been obvious at that time to that person. Knowledge of an Applicant’s disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search, and evaluate the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon an Applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

*MPEP* § 2142 (emphasis added). Thus, if the only objective evidence of such teaching to modify and/or combine prior art reference components is an applicant’s disclosure, no evidence of such teaching exists.<sup>8</sup>

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<sup>7</sup> “Factual information” is information actually existing or occurring, as distinguished from mere supposition or opinion. *Black’s Law Dictionary* 532 (5th ed. 1979).

<sup>8</sup> An applicant may argue that an examiner’s conclusion of obviousness is based on improper hindsight reasoning. However, “[a]ny judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.” *MPEP* § 2145(X)(A) (emphasis added).

The second rule is that if an examiner attempts to rely on some advantage or expected beneficial result that would have been produced by a modification and/or combination of the prior art reference components as evidence to support a rationale to establish such teachings to modify and/or combine prior art reference components, the MPEP requires that such advantage or expected beneficial result be objectively verifiable teachings present in the acceptable sources of prior art (or drawn from a convincing line of reasoning based on objectively verifiable established scientific principles or teachings). *MPEP* § 2144. Thus, as a guide to avoid the use of impermissible hindsight, these rules from the MPEP make clear that absent some objective evidence, sufficient to persuade under a preponderance of the evidence standard, no teaching of such modification and/or combination exists.<sup>9</sup>

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<sup>9</sup> *In Re Sang Su Lee* 277 F.3d 1338 (Fed. Cir. 2002) (“When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness.”) *See, e.g., McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 U.S.P.Q.2d 1001, 1008 (Fed. Cir. 2001) (“the central question is whether there is reason to combine [the] references,” a question of fact drawing on the *Graham* factors). *The factual inquiry whether to combine references must be thorough and searching.* *Id.* *It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with.* *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2d 1456, 1459 (Fed. Cir. 2000) (“a showing of a suggestion, teaching, or motivation to combine the prior art references is an ‘essential component of an obviousness holding’”) (quoting *C.R. Bard, Inc. v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q.2d 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999) (“Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.”); *In re Dance*, 160 F.3d 1339, 1343, 48 U.S.P.Q.2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988) (“teachings of references can be combined only if there is some suggestion or incentive to do so.”) (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984)). The need for specificity pervades this authority. *See, e.g., In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000) (“particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed”); *In re Rouffet*, 149 F.3d 1350, 1359, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998) (“even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.”)).

**B. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks") Do Not Show or Suggest the Text of Independent Claim 1 and Dependent Claims 2-12, 30-32 and 39-42 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 1**

Independent Claim 1 recites:

“1. A method comprising:  
transmitting with a second mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis Added)

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 1 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden to “teach” at least a portion of the text of Independent Claim 1 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/combinations of technologies cited by Examiner to meet the recitations of Independent Claim 1 are mere conclusory statements, would change the principle of operation, and/or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case<sup>10</sup> of the unpatentability of Independent Claim 1 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 1 and issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 1 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1**

As set forth above, Independent Claim 1 recites:

“1. A method comprising:

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<sup>10</sup> Specifically, *prima facie* is defined as “at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure.” *Black’s Law Dictionary* p. 1189 (6<sup>th</sup> ed. 1990).



[a] transmitting with a second mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 1, Mulgund shows:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the information stored at the node) (par. [0025) and [0062]), wherein in the first set of motes excludes the second mote [set of parent nodes 2 excludes a child node 2) (Fig. 1). It is noted that the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (par. [0026)) and therefore these terms are used here interchangeably.

Mulgund does not explicitly show that transmitting is with a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added).

Madden shows transmitting with a second mote [child node) at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id) of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents], wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node] (abstract. section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Examiner’s *Office Action*, pp. 8-9 (9 December 2009).<sup>11</sup>.

As noted, Clause [a] of Independent Claim 1 recites “transmitting with a second mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis added) It appears to Applicant that Examiner has mapped “**aggregate of one or more**

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<sup>11</sup> Applicant respectfully asserts that Examiner has apparently not examined the recitations of Applicant’s claims, but appears to have ignored the express language of both Applicant’s claims and the Examiner-cited technical material. Accordingly, Applicant respectfully maintains that Examiner has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if Examiner had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

**mote-addressed content indexes of a first set of motes”** onto “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Applicant notes that Examiner has not explained how he reaches this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description),<sup>12</sup> and furthermore, Applicant points out that this mapping appears to disregard at least the “aggregate of one or more mote-addressed content indexes of a first set of motes.”

In view of the foregoing, Applicant points out that although Independent Claim 1 has been quoted in the present rejection, several claim terms have been disregarded in its analysis. Because Examiner ignored at least the foregoing bolded recitations of Independent Claim 1,<sup>13</sup> under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 1. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

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<sup>12</sup> Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the Examiner fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. *See, e.g.*, 37 C.F.R. § 10.83 (“A practitioner should represent a client zealously within the bounds of the law.”); 37 C.F.R. § 10.84 (“[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part.”); and 37 C.F.R. § 10.76 (“A practitioner should represent a client competently.”). For these and other reasons, this document notes instances in which the Examiner inadvertently did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the Examiner’s behalf.

<sup>13</sup> Although Independent Claim 34 has been quoted in the present rejection, several claim terms have been disregarded in its analysis, as shown below.

**b) Examiner is Characterizing Mulgund and/or Madden to “Teach” the Text of Independent Claim 1, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1**

The Examiner has stated as follows:

“As to claim 1, Mulgund shows:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the information stored at the node) (par. [0025) and [0062]), wherein in the first set of motes excludes the second mote [set of parent nodes 2 excludes a child node 2) (Fig. 1). It is noted that the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (par. [0026)) and therefore these terms are used here interchangeably.

Mulgund does not explicitly show that transmitting is with a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added).”

*See Examiner’s Office Action*, pp. 8-9 (9 December 2009).

Applicant respectfully disagrees and traverses the rejection.

**(1) Examiner Has Put Forth No Evidence Supporting His Characterization That Mulgund “Teaches” Recitations of Independent Claim 1**

Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “aggregate of one or more mote-addressed content indexes of a first set of motes” as recited in Applicant's Independent Claim 1. Rather, the portions of Mulgund cited by Examiner recite as follows:

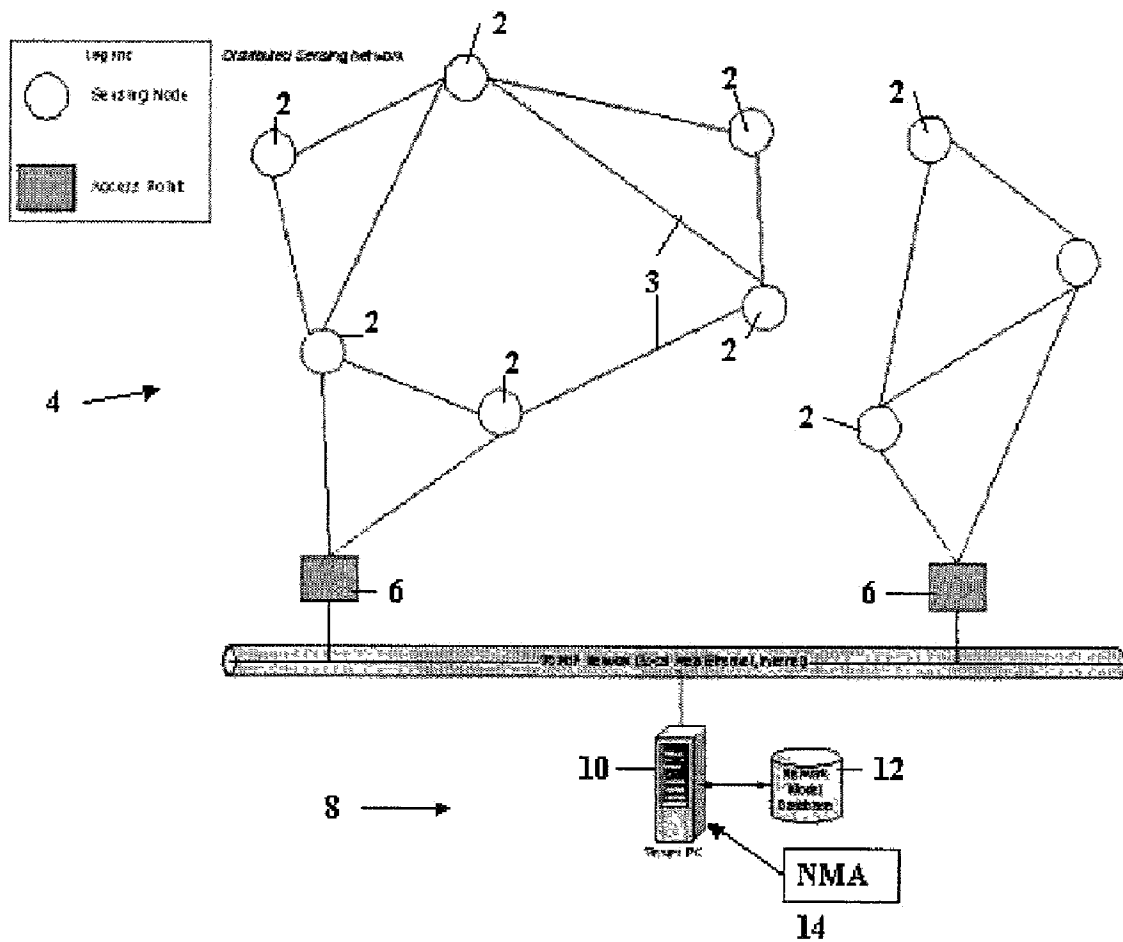
It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change

over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

See *Mulgund* (paragraph [0025]) (Emphasis Added)

The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.

See *Mulgund* (paragraph [0062]) (Emphasis Added)



See *Mulgund* (Fig. 1)

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein

could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

See *Mulgund* (paragraph [0026]) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of *Mulgund* do not recite the text of at least Clause [a] of Independent Claim 1: “aggregate of one or more mote-addressed content indexes of a first set of motes.” (emphasis added) Instead, *Mulgund* recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (*Mulgund* Paragraph [0062]) Consequently, on its face, *Mulgund* does not show the text of at least Clause [a] of Independent Claim 1.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that *Mulgund* describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 1 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 1 and the Examiner-cited *Mulgund* reference are very different on their faces. See *supra* at p. 58 (quotation of Claim 1); at pp. 61–63 (quotation of *Mulgund*). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 1,

and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 1 either under the MPEP or under controlling legal standards. *See supra* at pp. 17-23.

Accordingly, insofar as that Mulgund does not recite the text of at least Clause [a] of Applicant's Independent Claim 1, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [a] of Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant's Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [a] of Independent Claim 1. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case<sup>14</sup> of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

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<sup>14</sup> Specifically, *prima facie* is defined as “at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure.” *Black’s Law Dictionary* p. 1189 (6<sup>th</sup> ed. 1990).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
“Teaches” Recitations of Independent Claim 1**

As noted above, Examiner has stated as follows:

“As to claim 1, ...

Madden shows transmitting with a second mote [child node) at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id) of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents], wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

*See Examiner’s Office Action*, p. 8-9 (9 December 2009).

Although Examiner states “Madden shows transmitting with a second mote [child node) at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents], wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node]” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [a], and accordingly has inadvertently ignored at least the “transmitting with a second mote at least a part of aggregate of one or more mote-addressed content indexes of a first set of motes an aggregate of one or more mote-addressed content indexes of a first set of motes” recitations of Clause [a]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can discern, Madden does not recite “aggregate of one or more mote-addressed content indexes of a first set of motes” as recited in Clause [a] of Applicant’s Independent Claim 1. Rather, the textual portions of Madden cited by Examiner actually recite as follows:



We present the Tiny AGgregation (TAG) service for aggregation in low-power, distributed, wireless environments. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various generic properties of aggregates, and show how those properties affect the performance of our in network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault-tolerance of the basic solution.

See *Madden* (Abstract) (Emphasis Added)

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggybacking on the existing ad hoc networking protocol. Sensors route data back towards the user through a routing tree rooted at the basestation. As data flows up this tree, it is aggregated according to an aggregation function and value-based partitioning specified in the query. As an example, consider a query that counts the number of nodes in a network of indeterminate size. First, the request to count is injected into the network. Then, each leaf node in the tree reports a count of 1 to their parent; interior nodes sum the count of their children, add 1 to it, and report that value to their parent. Counts propagate up the tree in this manner, and flow out at the root.

See *Madden* (Section 1.1, Paragraph 2) (Emphasis Added)

Given the simple routing protocol from Section 2.2 and our query model, we now discuss the implementation of the core TAG algorithm for in network aggregation.

A naive implementation of sensor network aggregation would be to use a centralized, server-based approach where all sensor readings are sent to the base station, which then computes the aggregates. In TAG, however, we compute aggregates in network whenever possible, because, if properly implemented, this approach can be lower in number of message transmissions, latency, and power consumption than the server-based approach. We will measure the advantage of in network aggregation in Section 5 below; first, we present the basic algorithm in detail. We first consider the operation of the basic approach in the absence of grouping; we show how to extend it with grouping in Section 4.2.

See *Madden* (Section 4) (Emphasis Added)

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where

the aggregate values are continually routed up from children to parents. Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all devices in the network during that epoch. Given our goal of using as few messages as possible, the collection phase must ensure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

See *Madden* (Section 4.1, Paragraphs 1-2) (Emphasis Added)

Grouping in TAG is functionally equivalent to the GROUP BY clause in SQL: each sensor reading is placed into exactly one group, and groups are partitioned according to an expression over one or more attributes. The basic grouping technique is to push the expression down with the query, ask nodes to choose the group they belong to, and then, as answers flow back, update aggregate values in the appropriate groups.

Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two values using the combining value  $f$ . If it is in a different group, it stores the value of the child's group along with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the node updates the appropriate aggregate. During the next epoch, the node sends the value of all the groups about which it collected information during the previous epoch, combining information about multiple groups into a single message as long as message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

Recall that queries may contain a HAVING clause, which constrains the set of groups in the final query result. This predicate can sometimes be passed into the network along with the grouping expression. The predicate is only sent if it can potentially be used to reduce the number of messages that must be sent: for example, if the predicate is of the form  $\text{MAX}(\text{attr}) < x$ , then information about groups with  $\text{MAX}(\text{attr}) \geq x$  need not be transmitted up the tree, and so the predicate is sent down into the network.

When a node detects that a group does not satisfy a HAVING clause, it can notify other nodes in the network of this information to suppress transmission and storage of values from that group. Note that

HAVING clauses can be pushed down only for monotonic aggregates; non-monotonic aggregates are not amenable to this technique. However, not all HAVING predicates on monotonic aggregates can be pushed down; for example,  $\text{MAX}(\text{attr}) > x$  cannot be applied in the network because a node cannot know that, just because its local value of *attr* is less than *x*, the MAX over the entire group is less than *x*.

Grouping introduces an additional problem: the number of groups can exceed available storage on any one (nonleaf) device. Our proposed solution is to evict one or more groups from local storage. Once an eviction victim is selected, it is forwarded to the node's parent, which may choose to hold on to the group or continue to forward it up the tree. Notice that a single node may evict several groups in a single epoch (or the same group multiple times, if a bad victim is selected). This is because, once group storage is full, if only one group is evicted at a time, a new eviction decision must be made every time a value representing an unknown or previously evicted group arrives. Because groups can be evicted, the base station at the top of the network may be called upon to combine partial groups to form an accurate aggregate value. Evicting partially computed groups is known as partial *preaggregation*, as described in [15].

Thus, we have shown how to partition sensor readings into a number of groups and properly compute aggregates over those groups, even when the amount of group information exceeds available storage in any one device. We will briefly mention experiments with grouping and group eviction policies in Section 5.2. First, we summarize some of the additional benefits of TAG.

See Madden (Section 4.2) (Emphasis Added)

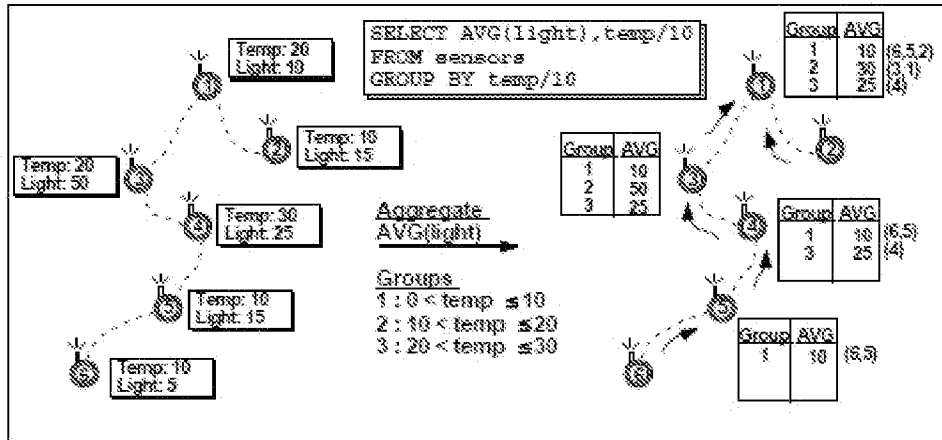


Figure 2: A sensor network (left) with an in network grouped aggregate applied to it (right). Parenthesized numbers represent nodes that contribute to the average

See Madden (Figure 2)

As can be seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of Independent Claim 1: “aggregate of one or more mote-addressed content indexes of a first set of motes.”<sup>15</sup> Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f .” (Madden Section 4.2) Consequently, on its face, Madden does not show the cited text of Independent Claim 1.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Madden describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 1 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 1 and the Examiner-cited Madden reference are very different on their faces. See *supra* at p. 24-25 (quotation of Claim 1); at p. 33-35 (quotation of Madden); and at p. 27-29 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 1, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a

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<sup>15</sup> This is a portion of the above-identified Clause [a], which recites, “at least one mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, and a sensing functionality.”

*prima facie* case of the unpatentability of Claim 1 either under the MPEP or under controlling legal standards. *See supra* at pp. 17-23.

As can be further seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of Independent Claim 1: “transmitting with a second mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id.” Consequently, on its face, Madden does not show the text or the emphasized terms of at least Clause [a] of Independent Claim 1.

Accordingly, insofar as that Madden does not recite the text of Clause [a] of Applicant’s Independent Claim 1, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [a] of Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant’s Claim 1, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Madden “teaches.” Examiner speaks of “transmitting with a second mote [child node]” of Madden allegedly where [set of parent nodes excludes a child node].” Examiner’s Office Action, p. 8-9 (9 December 2009). Applicant has reviewed the Madden reference and cannot find any recitation of an “transmitting with a second mote at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote” in the description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support

of Examiner's currently unsupported assertions regarding what Madden "teaches" and/or should be interpreted to "teach."

With respect to Examiner assertions regarding the teachings of Madden, Applicant demonstrated above that the express recitations of Madden are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant's Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

**(4) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Madden actually recites, the question thus naturally arises as to how Examiner saw Madden as "teaching" something related to Clause [a] of Independent Claim 1. Applicant respectfully points out that the Applicant's Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Madden as set forth, it follows that Examiner is interpreting Madden through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Madden are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing

reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**c) Examiner-Suggested Modifications/Combinations to Meet the Recitations of Independent Claim 1 Are a “Mere Conclusory Statement” Without Evidentiary Support/Change the Principle of Operation of Components of Cited References/Render Such Components Unfit for Intended Purpose; No Teaching to Combine/Modify Components as a Matter of Law.**

In addition and/or in the alternative to the foregoing, Applicant additionally points out that, not only has Examiner failed to adduce any objectively verifiable evidence sufficient to support Examiner assertions regarding alleged teaching to modify/combine Mulgund and/or Madden to meet the recitations of Independent Claim 1, there can be no such teaching as a matter of law. Specifically, shown following is that (1) the Examiner’s assertions regarding a teaching to modify/combine the technologies of Mulgund with the technologies of Madden appear to be based on conclusory statement(s) without evidentiary support, (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden as

suggested by Examiner in that the proposed modification/combination changes the principle of operation of one or more of the technologies; and (3) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden as suggested by Examiner in that such combination will render one or more of the technologies unfit for their intended purposes.

**(1) Examiner Assertions Regarding A Teaching to Modify/Combine to Meet the Recitations of Independent Claim 1 Are Based on “Mere Conclusory Statements” Without Evidentiary Support**

As explained above, the Supreme Court has stated that when an examiner attempts to establish unpatentability, the Examiner’s “*analysis should be made explicit*” ... [*and* that] rejections ... *cannot be sustained by mere conclusory statements*; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’ *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.(citations omitted)

Concerning Claim 1, as noted above, Examiner has stated as follows:

“It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner’s *Office Action*, p. 8-9 (9 December 2009).

Applicant respectfully asserts that this statement is neither evidence nor argument based upon evidence. Instead, the Examiner has attempted to support the present rejection based on this mere conclusory statement “It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund).”



Applicant accordingly requests that this statement's rational underpinning, if any, be made explicit. As explained below, however, in this context such an underpinning could not be articulated.

**(2) Examiner-Suggested Modifications to Meet the Recitations of Independent Claim 1 Change the Principle of Operation of Components Being Modified; No Teaching to Modify/Combine Components as a Matter of Law.**

With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In *re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.” 270 F.2d at 813, 123 USPQ at 352.).

As noted above, Examiner has stated as follows:

“It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner's *Office Action*, p. 8-9 (9 December 2009).

Applicant respectfully asserts that one reason for Mulgund's lack of disclosure of “transmitting with a second mote at least a part of an aggregate of one or more mote-addressed *content indexes* of a first set of motes, wherein the first set of motes excludes the second mote” may be gleaned from principles of operation indicated in this recitation:

“In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, ...” See *Mulgund* (paragraph [0026])

Applicant respectfully points out that were one to incorporate the “aggregate of one or more mote-addressed *content indexes*” as taught by Madden into the structure of Mulgund, Mulgund would no longer have a complete “knowledge base 18.” Thus, the Examiner-suggested modifications/ combinations would change the principle of operation of Mulgund for at least this reason.

As discussed above, one reason why such modified Mulgund technologies would be rendered unsatisfactory is that, at present, Examiner has not yet provided any teaching of how to incorporate the database structure of Madden with the Mulgund technologies to provide “transmitting with a second mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis added) as recited in Independent Claim 1. Hence, in addition to the Examiner-suggested modification/combination, there would need to be some type of reconstruction and/or redesign – appropriate to the capabilities of the knowledgebase and method of Mulgund – to provide for the aggregate data of Madden.

As has been shown above, the technologies of Mulgund modified/combined with the technologies of Madden as suggested by Examiner would require “substantial reconstruction and redesign of the elements shown in [... Mulgund] as well as a change in the basic principle under which the [... Mulgund] construction was designed to operate” in order to render the Examiner-suggested combination capable of performing even a subset of the intended purposes of the technologies of Mulgund.<sup>16</sup> As has also been shown, even if the Examiner-suggested combination were to be somehow hypothetically modified such

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<sup>16</sup> This statement reflects Applicant's current understanding. If Examiner can specify how such modifications/combinations can be implemented without substantially undermining any of Mulgund's intended purposes, however, Applicant respectfully requests that such specification be included with the next Office Action.

that the Examiner suggested modification/combination became somewhat workable, such a hypothetically modified version of the Examiner-suggested combination would itself require “substantial reconstruction and redesign of the [hypothetically modified] elements shown in [... Mulgund] as well as a change in the basic principle under which the [hypothetically modified] [... Mulgund] construction was designed to operate” in order to perform the intended communications. Accordingly, insofar as that the Examiner-suggested modification itself would likely require at least one additional and as-yet-hypothetical modifications as explained above, under the MPEP standards set forth in block quote above, Examiner’s suggested modification/combination “would change the principle of operation” of Mulgund’s technologies.

Insofar as that the Examiner-suggested modification/combination would itself require *substantial* hypothetical reconstruction and/or redesign to render the Examiner-suggested modification/combination capable of performing the intended purposes, under the MPEP guidelines as set forth above, the theory of operation of the technologies of Mulgund will have been changed. Consequently, under the MPEP standards as set forth above there can be no teaching to modify/combine such references to meet the recitations of Independent Claim 1 as a matter of law. Accordingly, in light of the MPEP standards for patentability, Applicant respectfully requests that the Examiner hold Independent Claim 1 patentable and issue a Notice of Allowance of Applicant’s Independent Claim 1 for at least the foregoing reasons.

**(3) Modifications to Meet the Recitations of Independent Claim 1 Render Components Being Modified Unsatisfactory for their Intended Purposes; No Teaching to Modify/Combine Components as a Matter of Law.**

Furthermore, “if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a pet-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

As noted above, Examiner has stated as follows:

“It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner’s *Office Action*, p. 8-9 (9 December 2009).

Applicant again points out that the Examiner has provided no evidence to modify/combine the cited technical materials to reach the recitations of Independent Claim 1. Even assuming, *arguendo*, that Examiner had produced an as-yet-unknown objective teaching of how to modify/combine the Examiner-suggested modification/combination of the “aggregate” of Madden with the knowledgebase of Mulgund to create “[a] transmitting with a second mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” as set forth in Independent Claim 1, such a

database would apparently render the technologies of Mulgund unsatisfactory for one or more of their intended purposes.

Mulgund recites, “the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18.” Mulgund at paragraph [0026]. It is unclear, at best, how these purposes can be served by “transmitting with a second mote at least a part of an aggregate” in conjunction with recited features of Independent Claim 1. Thus, for at least this reason, the suggested modifications/combinations would render the database of Mulgund unsatisfactory for their intended purposes. There can thus be no teaching to modify/combine such references to meet the recitations of Independent Claim 1 as a matter of law. Accordingly, and in light of the MPEP standards for patentability as set forth above, Applicant respectfully requests that Examiner hold Applicant’s Independent Claim 1 patentable and issue a Notice of Allowance of Independent Claim 1 for at least the reasons set forth herein.

**2. Amended Dependent Claims 2-12, 30-32 and 39-42: Patentable for at Least Reasons of Dependency from Independent Claim 1.**

Amended Claims 2-12, 30-32 and 39-42 depend either directly or indirectly from Independent Claim 1. “A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 2-12, 30-32 and 39-42 are patentable for at least the reasons why Independent Claim 1 is patentable. Accordingly, Applicant respectfully requests that Examiner hold amended Dependent Claims 2-12, 30-32 and 39-42 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

**3. Dependent Claim 31 is Independently Patentable**

Dependent Claim 31 is patentable for the reasons set forth above, and also due to additional reasons. Claim 31 recites “The method of claim 2, wherein the mote-addressed sensing index or the mote-addressed control index indicates the availability of information at a sensing device, a format of information obtained from the sensing

device, a format of commands to query the sensing device, or an output format of information from the queried device.” (Emphasis added)

With reference to Claim 31, the Examiner has stated as follows:

As to claim 31, Mulgund shows that the mote-addressed sensing index or the mote-addressed control index indicates an output format of information from the queried device [each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node] (par. [0042] in Mulgund).

Examiner’s *Office Action*, p. 13 (9 December 2009).

Appellant comments and arguments with respect to Mulgund and Madden in claim 1 are set forth above, and for the sake of brevity, are incorporated herein by reference. Regarding Mulgund, Appellant respectfully submits that Appellant has reviewed the portions of Mulgund, and as far as Appellant can discern, Mulgund does not state or suggest the above-noted recitations of Dependent Claim 31.

Specifically, the Examiner-cited portions of Mulgund recite as follows:

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes’ Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly. (Emphasis Added)

See Mulgund paragraph [0042].

Appellant respectfully submits that the Examiner-cited portions of Mulgund do not state or suggest “wherein the mote-addressed sensing index or the mote-addressed

control index indicates the availability of information at a sensing device, a format of information obtained from the sensing device, a format of commands to query the sensing device, or an output format of information from the queried device” as recited in Dependent Claim 4. Mulgund merely states that “Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data..” (para. [0042]). Mulgund is silent as to “*content index indicates ...*” as recited in Dependent Claim 31. Applicant submits that the “Each of these tables is defined” as recited in para. [0042] of Mulgund is NOT “*content index indicates ...*” For this additional reason, the Examiner has failed to meet his burden to establish a prima facie case of unpatentability of Claim 31, and Claim 31 is patentable for this additional reason. Therefore, Appellant respectfully requests the examiner withdraw his rejections and hold Dependent Claim 31 allowable and to issue a Notice of Allowability of same.

**C. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks ") Do Not Show or Suggest the Text of Independent Claim 13 and Dependent Claims 14-24 and 33-35 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 13**

Independent Claim 13 recites:

“A system comprising:

a device controlled by a second mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis Added)

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 13 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden

to “teach” at least a portion of the text of Independent Claim 13 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/ combinations of technologies cited by Examiner to meet the recitations of Independent Claim 13 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 13 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 13 and Issue a Notice of Allowability for same.

a) **Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 13 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 13**

As set forth above, Independent Claim 13 recites:

13. A system comprising:  
[a] a device controlled by a second mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 13, Mulgund shows:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the information stored at the node) (par. [0025] and [0062]), wherein in the first set of motes excludes the second mote [set of parent nodes 2 excludes a child node 2) (Fig. 1). It is noted that the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (par. [0026]) and therefore these terms are used here interchangeably.

Mulgund does not explicitly show an entity controlled by a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added).

Madden shows an entity controlled by a second mote [child node's RFM radio device) to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents], wherein in the first set of



motes excludes the second mote [set of parent nodes excludes a child node] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an entity controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner’s *Office Action*, p. 12-13 (9 December 2009).

As noted, Clause [a] of Independent Claim 13 recite “a device controlled by a second mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis added) It appears to Applicant that Examiner has mapped “aggregate of one or more mote-addressed content indexes of a first set of motes” onto “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Applicant notes that Examiner has not explained how he reaches this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description), and furthermore, Applicant points out that this mapping appears to disregard at least the “aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote.”

In view of the foregoing, Applicant points out that although Independent Claim 13 has been quoted in the present rejection, several claim terms have been disregarded in its analysis. Because Examiner ignored at least the foregoing bolded recitations of Independent Claim 13, under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of

Independent Claim 13. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 13 allowable and to issue a Notice of Allowability of same.

**b) Examiner is Characterizing Mulgund and/or Mulgund to “Teach” the Text of Independent Claim 13, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 13**

The Examiner has stated as follows:

“As to claim 13, Mulgund shows:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the information stored at the node) (par. (0025) and [0062]), wherein in the first set of motes excludes the second mote [set of parent nodes 2 excludes a child node 2) (Fig. 1). It is noted that the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (par. (0026)) and therefore these terms are used here interchangeably.

Mulgund does not explicitly show an entity controlled by a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added).

Madden shows an entity controlled by a second mote [child node's RFM radio device) to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents], wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an entity controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

*See Examiner’s Office Action*, p. 12-13 (9 December 2009).

Applicant respectfully disagrees and traverses the rejection.

**(1) Examiner Has Put Forth No Evidence  
Supporting His Characterization That  
Mulgund “Teaches” Recitations of  
Independent Claim 13**

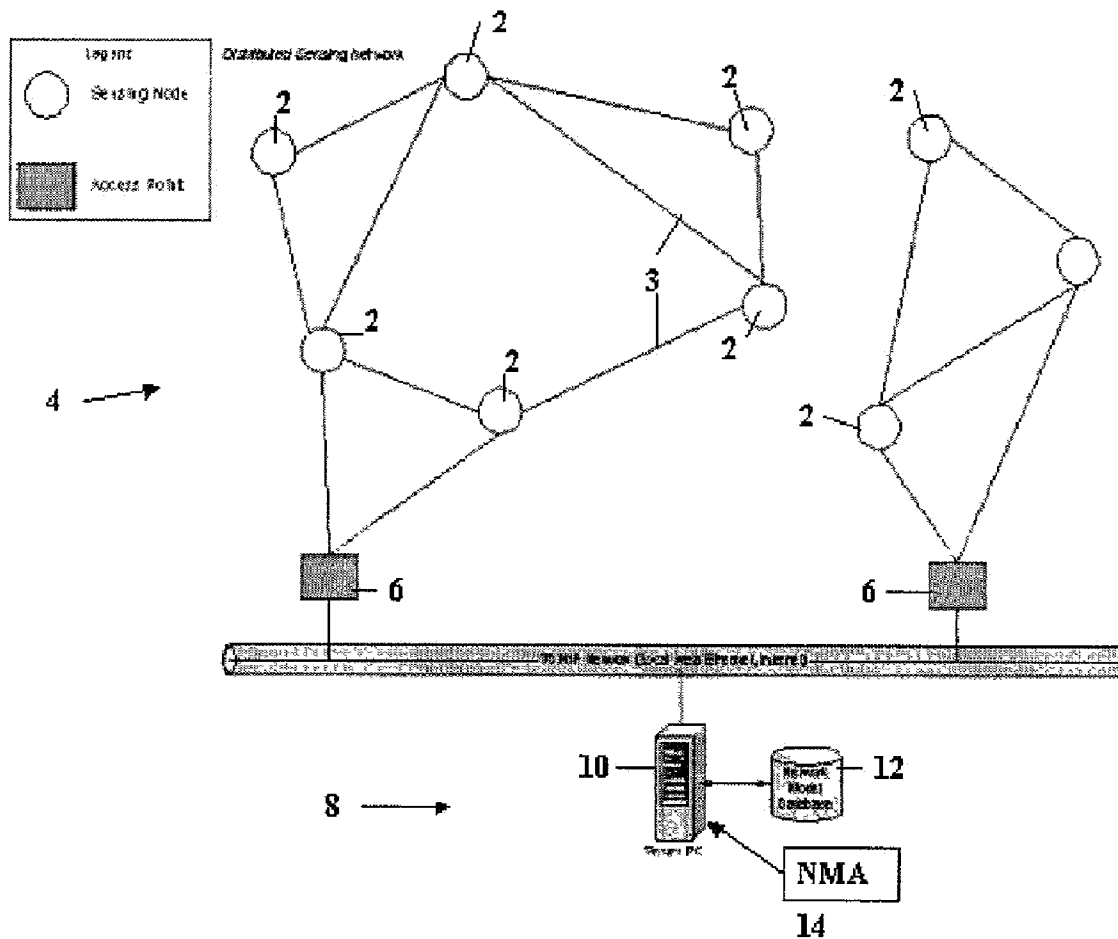
Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “agent configured to index at least a part of at least one mote-addressed content index including an index of content of other motes” as recited in Applicant's Independent Claim 13. Rather, the portions of Mulgund cited by Examiner recite as follows:

It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

See *Mulgund* (paragraph [0025]) (Emphasis Added)

The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.

See *Mulgund* (paragraph [0062]) (Emphasis Added)



See *Mulgund* (Fig. 1)

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) *that have one or more sensors 16 providing high-value information connected to it*. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

See *Mulgund* (paragraph [0026]) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Mulgund do not recite the text of at least Clause [a] of Independent Claim 13: “a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote.” Instead, Mulgund recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (Mulgund Paragraph [0062]) Consequently, on its face, Mulgund does not show the text of at least Clause [a] of Independent Claim 13.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 13. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 13 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 13 and the Examiner-cited Mulgund reference are very different on their faces. See *supra* at p. 58 (quotation of Claim 13); at pp. 61–63 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 13, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 13 either under the *MPEP* or under controlling legal standards. See *supra* at pp. 17-23.

Accordingly, insofar as that Mulgund does not recite the text of at least Clause [a] of Applicant’s Independent Claim 13, and insofar as that Examiner has provided no

objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [a] of Independent Claim 13, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 13 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 13 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant’s Independent Claim 13. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 13 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [a] of Independent Claim 13. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this

and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 13 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what the cited technical material "teaches." In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
"Teaches" Recitations of Independent Claim 13**

As noted above, Examiner has stated as follows:

"As to claim 13, Mulgund shows:  
transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the information stored at the node) (par. (0025) and [0062]], wherein in the first set of motes excludes the second mote [set of parent nodes 2 excludes a child node 2) (Fig. 1). It is noted that the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (par. (0026)) and therefore these terms are used here interchangeably.

Mulgund does not explicitly show an entity controlled by a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added).

Madden shows an entity controlled by a second mote [child node's RFM radio device) to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents], wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an entity controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner's *Office Action*, p. 12-13 (9 December 2009).

Although Examiner states Madden shows a transmitter controlled by a second mote [child node's RFM radio device] to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents), wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node]” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [a], and accordingly has inadvertently ignored at least the “multi-mote index creation agent configured to index at least a part of at least one mote-addressed content index including an index of content of other motes” recitations of Clause [a]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can discern, Madden does not recite “a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote” as recited in Clause [a] of Applicant's Independent Claim 13. Rather, the textual portions of Madden cited by Examiner actually recite as follows:



We present the Tiny AGgregation (TAG) service for aggregation in low-power, distributed, wireless environments. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various generic properties of aggregates, and show how those properties affect the performance of our in network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault-tolerance of the basic solution.

See *Madden* (Abstract) (Emphasis Added)

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggybacking on the existing ad hoc networking protocol. Sensors route data back towards the user through a routing tree rooted at the basestation. As data flows up this tree, it is aggregated according to an aggregation function and value-based partitioning specified in the query. As an example, consider a query that counts the number of nodes in a network of indeterminate size. First, the request to count is injected into the network. Then, each leaf node in the tree reports a count of 1 to their parent; interior nodes sum the count of their children, add 1 to it, and report that value to their parent. Counts propagate up the tree in this manner, and flow out at the root.

See *Madden* (Section 1.1, Paragraph 2) (Emphasis Added)

Given the simple routing protocol from Section 2.2 and our query model, we now discuss the implementation of the core TAG algorithm for in network aggregation.

A naive implementation of sensor network aggregation would be to use a centralized, server-based approach where all sensor readings are sent to the base station, which then computes the aggregates. In TAG, however, we compute aggregates in network whenever possible, because, if properly implemented, this approach can be lower in number of message transmissions, latency, and power consumption than the server-based approach. We will measure the advantage of in network aggregation in Section 5 below; first, we present the basic algorithm in detail. We first consider the operation of the basic approach in the absence of grouping; we show how to extend it with grouping in Section 4.2.

See *Madden* (Section 4) (Emphasis Added)

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where the aggregate values are continually routed up from children to parents.

Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all devices in the network during that epoch. Given our goal of using as few messages as possible, the collection phase must ensure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

See *Madden* (Section 4.1, Paragraphs 1-2) (Emphasis Added)

Grouping in TAG is functionally equivalent to the GROUP BY clause in SQL: each sensor reading is placed into exactly one group, and groups are partitioned according to an expression over one or more attributes. The basic grouping technique is to push the expression down with the query, ask nodes to choose the group they belong to, and then, as answers flow back, update aggregate values in the appropriate groups.

Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two values using the combining value  $f$ . If it is in a different group, it stores the value of the child's group along with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the node updates the appropriate aggregate. During the next epoch, the node sends the value of all the groups about which it collected information during the previous epoch, combining information about multiple groups into a single message as long as message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

Recall that queries may contain a HAVING clause, which constrains the set of groups in the final query result. This predicate can sometimes be passed into the network along with the grouping expression. The predicate is only sent if it can potentially be used to reduce the number of messages that must be sent: for example, if the predicate is of the form  $\text{MAX}(\text{attr}) < x$ , then information about groups with  $\text{MAX}(\text{attr}) \geq x$  need not be transmitted up the tree, and so the predicate is sent down into the network.

When a node detects that a group does not satisfy a HAVING clause, it can notify other nodes in the network of this information to suppress transmission and storage of values from that group. Note that HAVING clauses can be pushed down only for monotonic aggregates;

non-monotonic aggregates are not amenable to this technique. However, not all HAVING predicates on monotonic aggregates can be pushed down; for example,  $\text{MAX}(\text{attr}) > x$  cannot be applied in the network because a node cannot know that, just because its local value of *attr* is less than  $x$ , the MAX over the entire group is less than  $x$ .

As can be seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of Independent Claim 13: “a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote..” Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Consequently, on its face, Madden does not show the cited text of Independent Claim 13.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Madden describes or teaches the text of Clause [a] of Independent Claim 13. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 13 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 13 and the Examiner-cited Madden reference are very different on their faces. See *supra* at p. 47-48 (quotation of Claim 13); at p. 51-52 (quotation of Mulgund) and at p. 57-59 (quotation of Madden). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 13, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a

*prima facie* case of the unpatentability of Claim 13 either under the MPEP or under controlling legal standards. *See supra* at pp. 17-23.

As can be further seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of Independent Claim 13: “a device controlled by a second mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id.” Consequently, on its face, Madden does not show the text of at least Clause [a] of Independent Claim 13.

Accordingly, insofar as that Madden does not recite the text of Clause [a] of Applicant’s Independent Claim 13, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [a] of Independent Claim 13, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 13 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 13 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant’s Claim 13, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Madden “teaches.” Examiner speaks of “a mote” of Madden allegedly with a resident “a multi-mote index creation agent.” Examiner’s Office Action, p. 12-13 (9 December 2009). Applicant has reviewed the Madden reference and cannot find any recitation of an “aggregate of one or more mote-addressed content indexes of a first set of motes” in the mote description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently

unsupported assertions regarding what Madden “teaches” and/or should be interpreted to “teach.”

With respect to Examiner assertions regarding the teachings of Madden, Applicant demonstrated above that the express recitations of Madden are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant’s Independent Claim 13. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 13 allowable and issue a Notice of Allowability of same.

**(4) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Madden actually recites, the question thus naturally arises as to how Examiner saw Madden as “teaching” something related to Clause [a] of Independent Claim 13. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Madden as set forth, it follows that Examiner is interpreting Madden through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Madden are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing

reasons, Applicant respectfully requests that Examiner hold Independent Claim 13 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**c) Examiner-Suggested Modifications/Combinations to Meet the Recitations of Independent Claim 13 Are a “Mere Conclusory Statement” Without Evidentiary Support/Change the Principle of Operation of Components of Cited References/Render Such Components Unfit for Intended Purpose; No Teaching to Combine/Modify Components as a Matter of Law.**

In addition and/or in the alternative to the foregoing, Applicant additionally points out that, not only has Examiner failed to adduce any objectively verifiable evidence sufficient to support Examiner assertions regarding alleged teaching to modify/combine Mulgund and/or Madden to meet the recitations of Independent Claim 13, there can be no such teaching as a matter of law. Specifically, shown following is that (1) the Examiner’s assertions regarding a teaching to modify/combine the technologies of Mulgund with the technologies of Madden appear to be based on conclusory statement(s) without evidentiary support, (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden as

suggested by Examiner in that the proposed modification/combination changes the principle of operation of one or more of the technologies; and (3) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden as suggested by Examiner in that such combination will render one or more of the technologies unfit for their intended purposes.

**(1) Examiner Assertions Regarding A Teaching to Modify/Combine to Meet the Recitations of Independent Claim 13 Are Based on “Mere Conclusory Statements” Without Evidentiary Support**

As explained above, the Supreme Court has stated that when an examiner attempts to establish unpatentability, the Examiner’s “*analysis should be made explicit*” ... [*and that*] rejections ... *cannot be sustained by mere conclusory statements*; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’ *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.(citations omitted)

Concerning Claim 13, as noted above, Examiner has stated as follows:

“As to claim 13, Mulgund shows:

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an entity controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner’s *Office Action*, p. 12-13 (9 December 2009).

Applicant respectfully asserts that this statement is neither evidence nor argument based upon evidence. Instead, the Examiner has attempted to support the present rejection based on this mere conclusory statement that “It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having a transmitter controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message



transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).” Applicant accordingly requests that this statement’s rational underpinning, if any, be made explicit. As explained below, however, in this context such an underpinning could not be articulated.

**(2) Examiner-Suggested Modifications to Meet the Recitations of Independent Claim 13 Change the Principle of Operation of Components Being Modified; No Teaching to Modify/Combine Components as a Matter of Law.**

With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

**THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE**

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.” 270 F.2d at 813, 123 USPQ at 352.).

As noted above, Examiner has stated as follows:

“It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an entity controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power

consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner’s *Office Action*, p. 12-13 (9 December 2009).

Applicant respectfully asserts that one reason for Mulgund’s lack of disclosure of “a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes” may be gleaned from principles of operation indicated in this recitation:

“In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, ...” See *Mulgund* (paragraph [0026])

Applicant respectfully points out that were one to incorporate the “aggregate” as taught by Madden into the structure of Mulgund, Mulgund would no longer have a complete “knowledge base 18.” Thus, the Examiner-suggested modifications/combinations would change the principle of operation of Mulgund for at least this reason.

As discussed above, one reason why such modified Mulgund technologies would be rendered unsatisfactory is that, at present, Examiner has not yet provided any teaching of how to incorporate the database structure of Madden with the Mulgund technologies to provide “a device controlled by a second mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote.” (Emphasis added) as recited in Independent Claim 13. Hence, in addition to the Examiner-suggested modification/combination, there would need to be some type of reconstruction and/or redesign – appropriate to the capabilities of the knowledgebase and method of Mulgund – to provide for the aggregate data of Madden.

As has been shown above, the technologies of Mulgund modified/combined with the technologies of Madden as suggested by Examiner would require “substantial reconstruction and redesign of the elements shown in [... Mulgund] as well as a change in the basic principle under which the [... Mulgund] construction was designed to operate” in order to render the Examiner-suggested combination capable of performing even a subset of the intended purposes of the technologies of Mulgund. As has also been shown, even if

the Examiner-suggested combination were to be somehow hypothetically modified such that the Examiner suggested modification/combination became somewhat workable, such a hypothetically modified version of the Examiner-suggested combination would itself require “substantial reconstruction and redesign of the [hypothetically modified] elements shown in [... Mulgund] as well as a change in the basic principle under which the [hypothetically modified] [... Mulgund] construction was designed to operate” in order to perform the intended communications. Accordingly, insofar as that the Examiner-suggested modification itself would likely require at least one additional and as-yet-hypothetical modifications as explained above, under the MPEP standards set forth in block quote above, Examiner’s suggested modification/combination “would change the principle of operation” of Mulgund’s technologies.

Insofar as that the Examiner-suggested modification/combination would itself require *substantial* hypothetical reconstruction and/or redesign to render the Examiner-suggested modification/combination capable of performing the intended purposes, under the MPEP guidelines as set forth above, the theory of operation of the technologies of Mulgund will have been changed. Consequently, under the MPEP standards as set forth above there can be no teaching to modify/combine such references to meet the recitations of Independent Claim 13 as a matter of law. Accordingly, in light of the MPEP standards for patentability, Applicant respectfully requests that the Examiner hold Independent Claim 13 patentable and issue a Notice of Allowance of Applicant’s Independent Claim 13 for at least the foregoing reasons.

**(3) Modifications to Meet the Recitations of  
Independent Claim 13 Render Components  
Being Modified Unsatisfactory for their Intended  
Purposes; No Teaching to Modify/Combine  
Components as a Matter of Law.**

Furthermore, “if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” With respect to this point, Applicant

respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a pet-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

As noted above, Examiner has stated as follows:

“It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an entity controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).”

Examiner’s *Office Action*, p. 12-13 (9 December 2009).

Applicant again points out that the Examiner has provided no evidence to modify/combine the cited technical materials to reach the recitations of Independent Claim 13. Even assuming, *arguendo*, that Examiner had produced an as-yet-unknown objective teaching of how to modify/combine the Examiner-suggested modification/combination of the aggregate of Madden with the knowledgebase of

Mulgund to create “[a] a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote,” as set forth in Independent Claim 13, such a aggregate would apparently render the database of Mulgund unsatisfactory for one or more of their intended purposes.

Mulgund recites, “the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18.” Mulgund at paragraph [0026]. It is unclear, at best, how these purposes can be served by an “transmitting with a second mote at least a part of an aggregate” in conjunction with recited features of Independent Claim 13. Thus, for at least this reason, the suggested modifications/combinations would render the technologies of Mulgund unsatisfactory for their intended purposes. There can thus be no teaching to modify/combine such references to meet the recitations of Independent Claim 13 as a matter of law. Accordingly, and in light of the MPEP standards for patentability as set forth above, Applicant respectfully requests that Examiner hold Applicant’s Independent Claim 13 patentable and issue a Notice of Allowance of Independent Claim 13 for at least the reasons set forth herein.

**2. Amended Dependent Claims 14-24 and 33-35: Patentable for at Least Reasons of Dependency from Independent Claim 13.**

Amended Claims 14-24 and 33-35 depend either directly or indirectly from Independent Claim 13. “A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 14-24 and 33-35 are patentable for at least the reasons why Independent Claim 13 is patentable. Accordingly, Applicant respectfully requests that Examiner hold amended Dependent Claims 14-24 and 33-35 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

**D. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks ") and Woo (A Transmission Control Scheme for Media Access in Sensor Networks)) Do Not Show or Suggest the Text of Independent Claim 25 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 25**

Amended Independent Claim 25 recites:

25. A system comprising:  
a second mote; and  
means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote. (Emphasis Added)

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 25 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden to “teach” at least a portion of the text of Independent Claim 25 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/combinations of technologies cited by Examiner to meet the recitations of Independent Claim 25 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 25 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 25 and Issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 25 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 25**

As set forth above, Amended Independent Claim 25 recites:

25. A system comprising:

[a] a second mote; and

[b] means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote. (Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 25, Mulgund shows a second mote (Fig. 1 node (2)).

Mulgund does not explicitly show means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said second mote.

Madden shows means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1).

Mulgund in view of Madden does not show that the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excludes mote addressed content indexes of the second mote.

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo shows that the transmitted data of the first set of motes excludes data of the second mote [multi hop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of

received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

Examiner’s *Office Action*, p. 17-19 (9 December 2009).

As noted, Clause [b] of Independent Claim 25 recites “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote.” (Emphasis added) It appears to Applicant that Examiner has mapped “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote,” onto “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Applicant notes that Examiner has not explained how he reaches this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description), and furthermore, Applicant points out that this mapping appears to disregard at least the “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote.”

In view of the foregoing, Applicant points out that although Independent Claim 25 has been quoted in the present rejection, several claim terms have been disregarded in its analysis. Because Examiner ignored at least the foregoing bolded recitations of Independent Claim 25, under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 25. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.



**b) Examiner is Characterizing Mulgund and/or Madden and/or Woo to “Teach” the Text of Independent Claim 25, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 25**

The Examiner has stated as follows:

“As to claim 25, Mulgund shows a second mote (Fig. 1 node (2)).

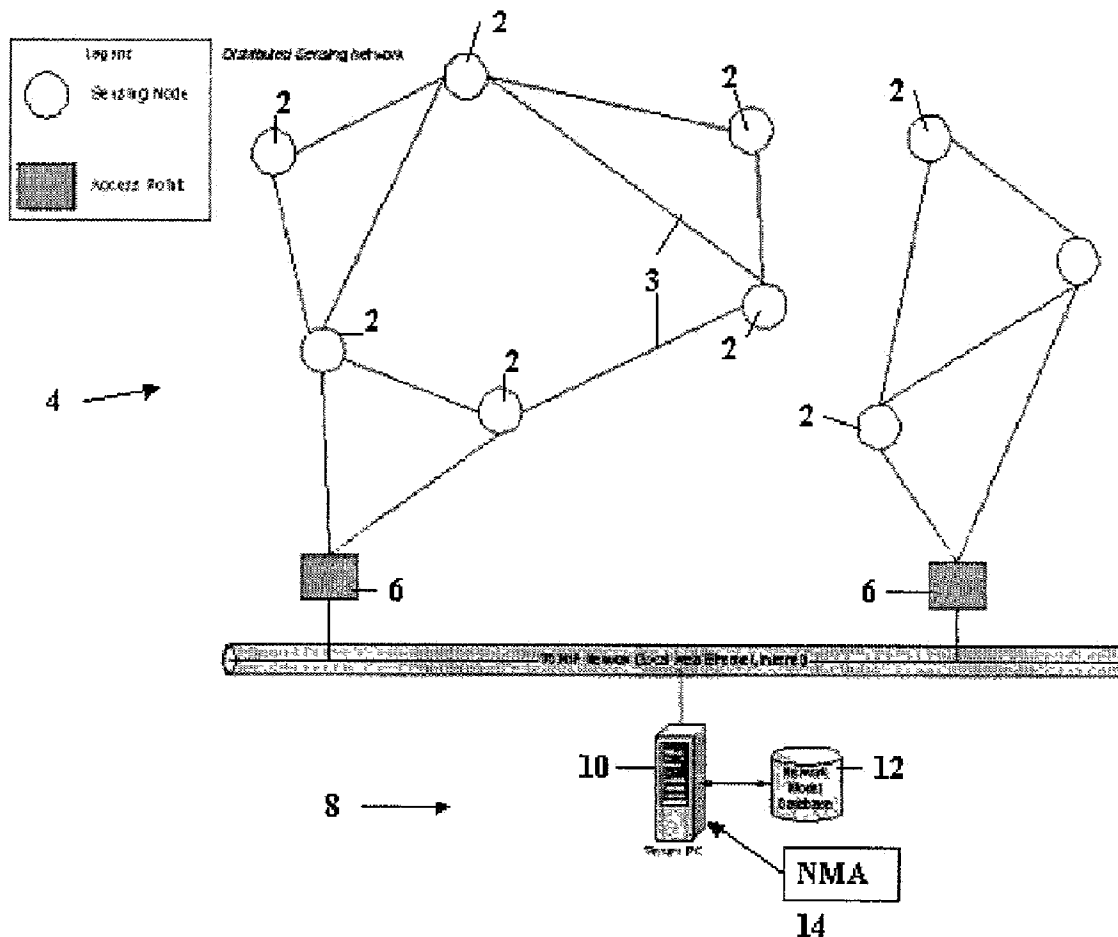
Mulgund does not explicitly show means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said second mote.”

Examiner’s *Office Action*, pp. 17-18 (9 December 2009).

Applicant respectfully traverses the rejection.

**(1) Examiner Has Put Forth No Evidence Supporting His Characterization That Mulgund “Teaches” Recitations of Independent Claim 25**

Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote” as recited in Applicant's Independent Claim 25. Rather, the portions of Mulgund cited by Examiner recite as follows:



See *Mulgund* (Fig. 1)

As can be seen from the foregoing, the Examiner-identified portions of *Mulgund* do *not recite* the text of at least Clause [b] of Independent Claim 25: “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote.” (Emphasis Added) Instead, *Mulgund* recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (*Mulgund* Paragraph [0062]) Consequently, on its face, *Mulgund* does not show the text of at least Clause [b] of Independent Claim 25.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no PROFFERED EVIDENCE THAT WOULD SUPPORT A finding of fact that Mulgund describes or teaches the text of Clause [b] of Independent Claim 25. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 25 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 25 and the Examiner-cited Mulgund reference are very different on their faces. See *supra* at p. 58 (quotation of Claim 25); at pp. 61–63 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 25, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 25 either under the *MPEP* or under controlling legal standards. See *supra* at pp. 17-23.

Accordingly, insofar as that Mulgund does not recite the text of at least Clauses [b] of Applicant’s Independent Claim 25, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [b] of Independent Claim 25, Applicant respectfully points out that under the *MPEP* guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 25 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant’s Independent Claim 25. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [b] of Independent Claim 25. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g., MPEP S 2144.03(C), If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
“Teaches” Recitations of Independent Claim 25**

As noted above, Examiner has stated as follows:

“As to claim 25, ...

Mulgund does not explicitly show means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said second mote.

Madden shows means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1).

Mulgund in view of Madden does not show that the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excludes mote addressed content indexes of the second mote.”

Examiner's *Office Action*, p. 17-19 (9 December 2009).

Although Examiner states "Madden shows means for transmitting at least a part of an aggregate of one. Or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (Madden section 1 Introduction)," Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has inadvertently ignored at least the "means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote." as recited in Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can discern, Madden does not recite "the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote" as recited in Clause [b] of Applicant's Independent Claim 25. Rather, the textual portions of Madden cited by Examiner actually recite as follows:

Recent advances in computing technology have led to the production of a new class of computing device: the wireless, battery powered, smart sensor [25]. These new sensors are active, full fledged computers, capable not only of measuring real world phenomena but also filtering, sharing, and combining those measurements. One example of such small sensor devices are the motes under development at UC Berkeley. Current generation motes are roughly 2cm x 4cm x 1cm and are equipped with a radio, a processor, memory, a small battery pack, and a suite of sensors. The mote operating system, TinyOS, provides a set of primitives designed to facilitate the deployment of motes in ad-hoc networks. In such networks, devices can identify each other and route data without prior knowledge of or assumptions about the network topology, allowing the

network topology to change as devices move, run out of power, or experience shifting waves of interference. Due to the relative ease of deployment of mote-based sensor networks, practitioners in a variety of fields have begun considering them for a range of monitoring and data collection tasks. For example: civil engineers are using motes to monitor building integrity during earthquakes [31]; biologists are planning mote deployments for habitat monitoring[21, 5]; administrators of large computer clusters are interested in using motes to monitor the temperature and power usage in their data centers. All of these sensor applications depend on the ability to extract data from the network. Often, this data consists of summaries (or aggregations) rather than raw sensor readings. Other researchers have noted the importance of data aggregation in sensor networks [13, 10, 12]. This previous work has tended to view aggregation as an applicationspecific mechanism that would be programmed into the devices on an as-needed basis, typically in error-prone, low-level languages like C. In contrast, our position is that because aggregation is so central to emerging sensor network applications, it must be provided as a core service by the system software. Instead of a set of extensible C APIs, we believe this service should consist of a generic, easily invoked high-level programming abstraction. This approach enables users of sensor networks, who often are not networking experts or even computer scientists, to focus on their applications free from the idiosyncrasies of the underlying embedded OS and hardware.

See *Madden* (Section 1, Introduction) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of *Madden* do not recite the text of at least Clause [b] of Independent Claim 25: “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote.” Instead, *Madden* recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value  $f$ .” (*Madden* Section 4.2) Consequently, on its face, *Madden* does not show the cited text of Independent Claim 25.

(1) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Woo  
“Teaches” Recitations of Independent Claim  
25

As noted above, Examiner has stated as follows:

“As to claim 25,...

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo shows that the transmitted data of the first set of motes excludes data of the second mote [multi hop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

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Examiner’s *Office Action*, p. 17-19 (9 December 2009).

Although Examiner states “Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network,” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has inadvertently ignored at least the **“the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote”** (Emphasis added) recitations of Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Woo reference identified by Examiner, and so far as Applicant can discern, Woo does not recite “the transmitted aggregate of one or more mote-addressed content indexes of the



first set of motes” as recited in Clause [b] of Applicant's Independent Claim 25. Rather, the textual portions of Woo cited by Examiner actually recite as follows:

TinyOS [7] is an event-based operating system for these devices that provides fine-grained interleaving of event processing and tasks from multiple system components. The complete TinyOS application for our study is shown in Figure 2. There is a component providing an asynchronous interface to each sensor and a stack of components to implement networking over the radio. The lowest layer transmits or receives bytes bit-by-bit over the radio. It provides phase and rate controls to lock on to the packet start symbol and then to spool bits. At this level, the interface is half-duplex - the radio is receiving except, during packet transmission. The packet-level component is responsible for spooling incoming bytes and delivering the packet receive event. It is where the media access control mechanisms for transmit reside. (It also performs the encoding and decoding of the byte stream onto the link and error checking: Manchester encoding with an 16-bit CRC.) Packets are short and of a fixed size, typically 30 bytes including an one byte destination field, an one byte handler field, and an application data unit.

The Active Message component delivers tagged packet events to application level components. Here we have two such components. The sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network. The other component is responsible for building the dynamic multihop network and routing traffic. A simple beacon-based discovery protocol maintains a breadth-first spanning tree, such that each node knows a "parent node" closer to the base station. Originating sensor packets are marked for the parent. (All other nodes discard them.) At each hop, the multihop component receives a packet and retransmits it to the upstream level. In general, this component might perform aggregation or statistical analysis. However, we restrict ourselves to the case where it forwards all data to the infrastructure for analysis, as this focuses the work on the media access and transmission control aspects. This component does collect statistics on the number of nodes routing through it. The only buffering in the system is a fixed number of small packet buffers at the application level, one of which is used for the asynchronous receive. Thus, if the radio is busy transmitting or receiving when a packet send is requested, the request will fail back up to the application component. Once the packet component has accepted a packet for transmission, it will work on it until it acquires the channel and transmits it. Thus, the transmission rate control is implemented within the two application components.

See Woo (Section 2.1, Networking Component Stack)

As can be seen from the foregoing, the Examiner-identified portions of Woo do not recite the text of at least Clause [b] of Independent Claim 25: “the transmitted

aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote.” Instead, Woo recites “the sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network.” Consequently, on its face, Woo does not show the cited text of Independent Claim 25.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no PROFFERED EVIDENCE THAT WOULD SUPPORT A finding of fact that Madden describes or teaches the text of Clause [b] of Independent Claim 25. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 25 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 25 and the Examiner-cited Mulgund, Madden and Woo references are very different on their faces. *See supra* at p. 70-71 (quotation of Claim 25); at p. 74 (quotation of Mulgund); at p. 78-79 (quotation of Madden); at p. 81-81 (quotation of Woo). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 25, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 25 either under the *MPEP* or under controlling legal standards. *See supra* at pp. 17-23.

As can be further seen from the foregoing, the Examiner-identified portions of Madden and Woo do not recite the text of at least Clause [b] of Independent Claim 25: “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content**

**indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote.” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent.” And Woo recites “the sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network.”. Consequently, on its face, Madden and/or Woo do not show the text of at least Clause [b] of Independent Claim 25.

Accordingly, insofar as that Madden does not recite the text of Clause [b] of Applicant’s Independent Claim 25, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [b] of Independent Claim 25, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 25 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant’s Claim 25, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Madden and/or Woo “teaches.” Examiner speaks of “complete TinyOS application component graph” of Madden allegedly that “facilitates routing data from child device to a parent device.” Examiner’s Office Action, p. 16-17 (9 December 2009). Examiner speaks of “the sensor component periodically transmits the data toward a base station over the multi hop network” of Woo. Examiner’s Office Action, p. 16-17 (9 December 2009) Applicant has reviewed the Madden and the Woo reference and cannot find any recitation of an “transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote” in the TinyOS description. If Examiner desires to maintain the rejection, therefore, in the next

communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what Madden "teaches" and/or should be interpreted to "teach."

With respect to Examiner assertions regarding the teachings of Madden and/or Mulgund and/or Woo, Applicant demonstrated above that the express recitations of Madden and/or Mulgund and/or Woo are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden and/or Mulgund and/or Woo "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant's Independent Claim 25. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund, Madden and Woo actually recites, the question thus naturally arises as to how Examiner saw Mulgund, Madden and Woo as "teaching" something related to Clause [b] of Independent Claim 25. Applicant respectfully points out that the Applicant's Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund, Madden and Woo as set forth, it follows that Examiner is interpreting Mulgund, Madden

and Woo through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Mulgund, Madden and Woo are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what the cited technical material "teaches." In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**c) Examiner-Suggested Modifications/Combinations to Meet the Recitations of Independent Claim 25 Are a "Mere Conclusory Statement" Without Evidentiary Support/Change the Principle of Operation of Components of Cited References/Render Such Components Unfit for Intended Purpose; No Teaching to Combine/Modify Components as a Matter of Law.**

In addition and/or in the alternative to the foregoing, Applicant additionally points out that, not only has Examiner failed to adduce any objectively verifiable evidence sufficient to support Examiner assertions regarding alleged teaching to modify/combine Mulgund and/or Madden and/or Woo to meet the recitations of Independent Claim 25, there can be no such teaching as a matter of law. Specifically, shown following is that (1)

the Examiner's assertions regarding a teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Woo appear to be based on conclusory statement(s) without evidentiary support, (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Woo as suggested by Examiner in that the proposed modification/combination changes the principle of operation of one or more of the technologies; and (3) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Woo as suggested by Examiner in that such combination will render one or more of the technologies unfit for their intended purposes.

**(1) Examiner Assertions Regarding A Teaching to Modify/Combine to Meet the Recitations of Independent Claim 25 Are Based on “Mere Conclusory Statements” Without Evidentiary Support**

As explained above, the Supreme Court has stated that when an examiner attempts to establish unpatentability, the Examiner's “*analysis should be made explicit*” ... [*and that*] rejections ... *cannot be sustained by mere conclusory statements*; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’ *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.(citations omitted)

Concerning Claim 25, as noted above, Examiner has stated as follows:

“As to claim 25, ...

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1).”

Examiner's *Office Action*, p. 17-19 (9 December 2009).

Applicant respectfully asserts that this statement is neither evidence nor argument based upon evidence. Instead, the Examiner has attempted to support the present rejection based on this “mere conclusory statement “It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices.” Applicant accordingly requests that this statement’s rational underpinning, if any, be made explicit. As explained below, however, in this context such an underpinning could not be articulated.

**(2) Examiner-Suggested Modifications to Meet the Recitations of Independent Claim 25 Change the Principle of Operation of Components Being Modified; No Teaching to Modify/Combine Components as a Matter of Law.**

With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

**THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE**

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In *re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.” 270 F.2d at 813, 123 USPQ at 352.).

As noted above, Examiner has stated as follows:

“As to claim 25, ....

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1).”

Examiner’s *Office Action*, p. 17-19 (9 December 2009).

Applicant respectfully asserts that one reason for Mulgund's lack of disclosure of “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote” may be gleaned from principles of operation indicated in this recitation:

“In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, ...”. See *Mulgund* (paragraph [0026])

Applicant respectfully points out that were one to incorporate the “aggregate” as taught by Madden or “TinyOS application component graph” as taught by Woo into the structure of Mulgund, Mulgund would no longer have a “knowledge base 18”. Thus, the Examiner-suggested modifications/combinations would change the principle of operation of Mulgund for at least this reason.

As discussed above, one reason why such modified Mulgund technologies would be rendered unsatisfactory is that, at present, Examiner has not yet provided any teaching of how to incorporate the database structure of Madden with the Mulgund or Woo technologies to provide “[b] means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote.” (Emphasis added) as recited in Independent Claim 25. Hence, in addition to the Examiner-suggested modification/combination, there would need to be some type of reconstruction and/or



redesign – appropriate to the capabilities of the knowledgebase and method of Madden or Woo – to provide for the “knowledge base 18” structure of Mulgund.

As has been shown above, the technologies of Mulgund modified/combined with the technologies of Madden and/or Woo as suggested by Examiner would require “substantial reconstruction and redesign of the elements shown in [... Mulgund] as well as a change in the basic principle under which the [... Mulgund] construction was designed to operate” in order to render the Examiner-suggested combination capable of performing even a subset of the intended purposes of the technologies of Mulgund. As has also been shown, even if the Examiner-suggested combination were to be somehow hypothetically modified such that the Examiner suggested modification/combination became somewhat workable, such a hypothetically modified version of the Examiner-suggested combination would itself require “substantial reconstruction and redesign of the [hypothetically modified] elements shown in [... Mulgund] as well as a change in the basic principle under which the [hypothetically modified] [... Mulgund] construction was designed to operate” in order to perform the intended communications. Accordingly, insofar as that the Examiner-suggested modification itself would likely require at least one additional and as-yet-hypothetical modifications as explained above, under the MPEP standards set forth in block quote above, Examiner’s suggested modification/combination “would change the principle of operation” of Mulgund’s technologies.

Insofar as that the Examiner-suggested modification/combination would itself require *substantial* hypothetical reconstruction and/or redesign to render the Examiner-suggested modification/combination capable of performing the intended purposes, under the MPEP guidelines as set forth above, the theory of operation of the technologies of Mulgund will have been changed. Consequently, under the MPEP standards as set forth above there can be no teaching to modify/combine such references to meet the recitations of Independent Claim 25 as a matter of law. Accordingly, in light of the MPEP standards for patentability, Applicant respectfully requests that the Examiner hold Independent Claim 25 patentable and issue a Notice of Allowance of Applicant’s Independent Claim 25 for at least the foregoing reasons.

**(3) Modifications to Meet the Recitations of Independent Claim 25 Render Components Being Modified Unsatisfactory for their Intended Purposes; No Teaching to Modify/Combine Components as a Matter of Law.**

Furthermore, “if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

**THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE**

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a pet-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

As noted above, Examiner has stated as follows:

“As to claim 25, ....

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo shows that the transmitted data of

the first set of motes excludes data of the second mote [multi hop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

Examiner’s *Office Action*, p. 17-19 (9 December 2009).

Applicant again points out that the Examiner has provided no evidence to modify/combine the cited technical materials to reach the recitations of Independent Claim 25. Even assuming, *arguendo*, that Examiner had produced an as-yet-unknown objective teaching of how to modify/combine the Examiner-suggested modification/combination of the “aggregate” of Madden or “TinyOS application component” of Woo with the knowledgebase of Mulgund to create “[b] means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote, and said means for transmitting being disposed proximate to said second mote.” as set forth in Independent Claim 25, such a database would apparently render the technologies of Mulgund unsatisfactory for one or more of their intended purposes.

Mulgund recites, “the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18.” See *Mulgund* at paragraph [0026]. It is unclear, at best, how these purposes can be served by an “TinyOS” in conjunction with recited features of Independent Claim 25. Thus, for at least this reason, the suggested modifications/combinations would render the technologies of Mulgund unsatisfactory for their intended purposes. There can thus be no teaching to modify/combine such references to meet the recitations of Independent Claim 25 as a matter of law. Accordingly, and in light of the MPEP standards for patentability as set forth above, Applicant respectfully requests that Examiner hold Applicant’s Independent Claim 25

patentable and issue a Notice of Allowance of Independent Claim 25 for at least the reasons set forth herein.

**E. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks ") and Woo (A Transmission Control Scheme for Media Access in Sensor Networks)) Do Not Show or Suggest the Text of Independent Claim 26 and Dependent Claims 27-29 and 36-38 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 26**

Independent Claim 26 recites:

26. A system comprising:  
at least one mote; and  
at least one multi-mote reporting entity resident in said at least one mote,  
said at least one multi-mote reporting entity configured to report at least a part of  
a multi-mote content index stored in motes other than the at least one mote.

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 26 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden to “teach” at least a portion of the text of Independent Claim 26 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/combinations of technologies cited by Examiner to meet the recitations of Independent Claim 26 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 26 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 26 and Issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 26 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 26**

As set forth above, Independent Claim 26 recites:

26. A system comprising:  
[a] at least one mote; and  
[b] at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in motes other than the at least one mote.** (Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 26, Mulgund shows at least one mote (Fig. 1 node (2)). Mulgund does not explicitly show at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote.

Madden shows at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network (section 2.1 Networking Component Stack).

Examiner’s *Office Action*, p. 19-20 (9 December 2009).

As noted, Clause [b] of Independent Claim 26 recite “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in**

**motes other than the at least one mote.”** (Emphasis added) It appears to Applicant that Examiner has mapped “**report at least a part of a multi-mote content index stored in motes other than the at least one mote**” onto “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Applicant notes that Examiner has not explained how he reaches this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description), and furthermore, Applicant points out that this mapping appears to disregard at least the “report at least a part of a multi-mote content index stored in motes other than the at least one mote.”

In view of the foregoing, Applicant points out that although Independent Claim 26 has been quoted in the present rejection, several claim terms have been disregarded in its analysis. Because Examiner ignored at least the foregoing bolded recitations of Independent Claim 26, under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 26. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 26 allowable and to issue a Notice of Allowability of same.

**b) Examiner is Characterizing Mulgund and/or Madden and/or Woo to “Teach” the Text of Independent Claim 26, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 26**

The Examiner has stated as follows:

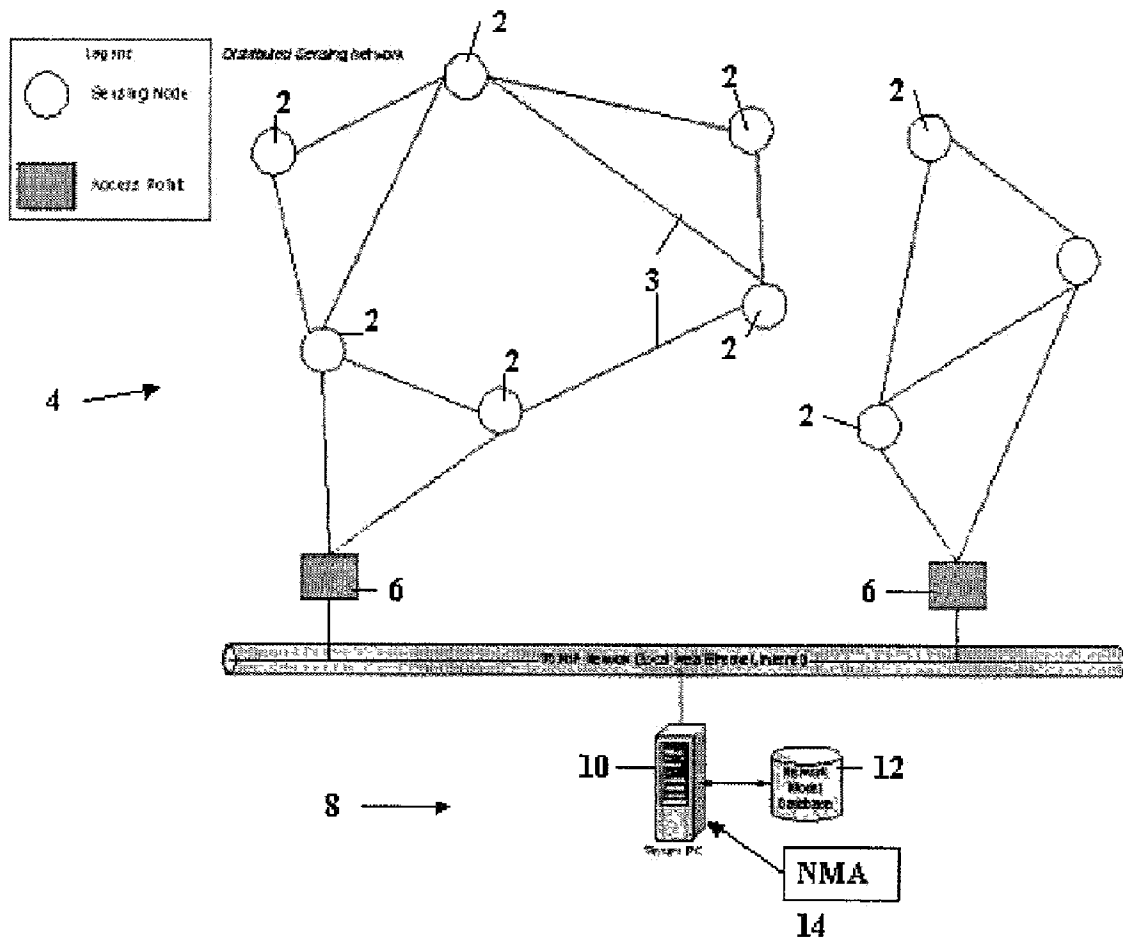
“As to claim 26, Mulgund shows at least one mote (Fig. 1 node (2)).”

Examiner’s *Office Action*, p. 19-20 (9 December 2009).

Applicant respectfully disagrees and traverses the rejection.

**(1) Examiner Has Put Forth No Evidence Supporting His Characterization That Mulgund “Teaches” Recitations of Independent Claim 26**

Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “report at least a part of a multi-mote content index stored in motes other than the at least one mote” as recited in Applicant's Independent Claim 26. Rather, the portions of Mulgund cited by Examiner recite as follows:



See *Mulgund* (Fig. 1)

As can be seen from the foregoing, the Examiner-identified portions of Mulgund do not recite the text of at least Clause [b] of Independent Claim 26: “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in notes other than the at least one mote.**” (Emphasis Added) Instead, Mulgund recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (Mulgund Paragraph [0062]) Consequently, on its face, Mulgund does not show the text of at least Clause [b] of Independent Claim 26.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [b] of Independent Claim 26. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 26 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 26 and the Examiner-cited Mulgund reference are very different on their faces. *See supra* at p. 58 (quotation of Claim 26); at p. 95 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 26, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 26 either under the MPEP or under controlling legal standards. *See supra* at pp. 17-23.



Accordingly, insofar as that Mulgund does not recite the text of at least Clauses [b] of Applicant's Independent Claim 26, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [b] of Independent Claim 26, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 26 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 26 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant's Independent Claim 26. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [b] of Independent Claim 26. Applicant respectfully points out that the

Applicant's Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what the cited technical material "teaches." In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
"Teaches" Recitations of Independent Claim 26**

As noted above, Examiner has stated as follows:

"As to claim 26,...

Madden shows at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction)."

Examiner's *Office Action*, p. 19-20 (9 December 2009).

Although Examiner states “Madden shows means for transmitting at least a part of an aggregate of one. Or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction),” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has inadvertently ignored at least the “least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote” recitations of Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can discern, Madden does not recite “report at least a part of a multi-mote content index stored in motes other than the at least one mote” as recited in Clause [b] of Applicant's Independent Claim 26. Rather, the textual portions of Madden cited by Examiner actually recite as follows:

Recent advances in computing technology have led to the production of a new class of computing device: the wireless, battery powered, smart sensor [25]. These new sensors are active, full fledged computers, capable not only of measuring real world phenomena but also filtering, sharing, and combining those measurements. One example of such small sensor devices are the motes under development at UC Berkeley. Current generation motes are roughly 2cm x 4cm x 1cm and are equipped with a radio, a processor, memory, a small battery pack, and a suite of sensors. The mote operating system, TinyOS, provides a set of primitives designed to facilitate the deployment of motes in ad-hoc networks. In such networks, devices can identify each other and route data without prior knowledge of or assumptions about the network topology, allowing the network topology to change as devices move, run out of power, or experience shifting waves of interference. Due to the relative ease of deployment of mote-based sensor networks, practitioners in a variety of fields have begun considering them for a range of monitoring and data collection tasks. For example: civil engineers are using motes to monitor building integrity during earthquakes [31]; biologists are planning

mote deployments for habitat monitoring[21, 5]; administrators of large computer clusters are interested in using motes to monitor the temperature and power usage in their data centers. All of these sensor applications depend on the ability to extract data from the network. Often, this data consists of summaries (or aggregations) rather than raw sensor readings.

Other researchers have noted the importance of data aggregation in sensor networks [13, 10, 12]. This previous work has tended to view aggregation as an applicationspecific mechanism that would be programmed into the devices on an as-needed basis, typically in error-prone, low-level languages like C. In contrast, our position is that because aggregation is so central to emerging sensor network applications, it must be provided as a core service by the system software. Instead of a set of extensible C APIs, we believe this service should consist of a generic, easily invoked high-level programming abstraction. This approach enables users of sensor networks, who often are not networking experts or even computer scientists, to focus on their applications free from the idiosyncrasies of the underlying embedded OS and hardware.

See *Madden* (Section 1, Introduction) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [b] of Independent Claim 26: “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote.” Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f .” (Madden Section 4.2) Consequently, on its face, Madden does not show the cited text of Independent Claim 26.

**(4) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Woo  
“Teaches” Recitations of Independent Claim  
26**

As noted above, Examiner has stated as follows:

“As to claim 26,...

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network (section 2.1 Networking Component Stack).”

Examiner’s *Office Action*, p. 19-20 (9 December 2009).

Although Examiner states “Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network,” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has inadvertently ignored at least the “**report at least a part of a multi-mote content index stored in motes other than the at least one mote**” (Emphasis added) recitations of Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Woo reference identified by Examiner, and so far as Applicant can discern, Woo does not recite “report at least a part of a multi-mote content index stored in motes other than the at least one mote” as recited in Clause [b] of Applicant's Independent Claim 26. Rather, the textual portions of Woo cited by Examiner actually recite as follows:

TinyOS [7] is an event-based operating system for these devices that provides fine-grained interleaving of event processing and tasks from multiple system components. The complete TinyOS application for our study is shown in Figure 2. There is a component providing an asynchronous interface to each sensor and a stack of components to implement networking over the radio. The lowest layer transmits or receives bytes bit-by-bit over the radio. It provides phase and rate controls to lock on to the packet start symbol and then to spool bits. At this level, the interface is half-duplex - the radio is receiving except. during packet transmission. The packet-level component is responsible for spooling incoming bytes and delivering the packet receive event. It is where the media access control mechanisms for transmit reside. (It also performs the encoding and decoding of the byte stream onto the link and error checking: Manchester encoding with an 16-bit CRC.) Packets are short and of a fixed size, typically 30 bytes including an one byte destination field, an one byte handler field, and an application data

unit.

The Active Message component delivers tagged packet events to application level components. Here we have two such components. The sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network. The other component is responsible for building the dynamic multihop network and routing traffic. A simple beacon-based discovery protocol maintains a breadth-first spanning tree, such that each node knows a "parent node" closer to the base station. Originating sensor packets are marked for the parent. (All other nodes discard them.) At each hop, the multihop component receives a packet and retransmits it to the upstream level. In general, this component might perform aggregation or statistical analysis. However, we restrict ourselves to the case where it forwards all data to the infrastructure for analysis, as this focuses the work on the media access and transmission control aspects. This component does collect statistics on the number of nodes routing through it. The only buffering in the system is a fixed number of small packet buffers at the application level, one of which is used for the asynchronous receive. Thus, if the radio is busy transmitting or receiving when a packet send is requested, the request will fail back up to the application component. Once the packet component has accepted a packet for transmission, it will work on it until it acquires the channel and transmits it. Thus, the transmission rate control is implemented within the two application components.

See *Woo* (Section 2.1, Networking Component Stack)

As can be seen from the foregoing, the Examiner-identified portions of *Woo* do not recite the text of at least Clause [b] of Independent Claim 26: "at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote." Instead, *Woo* recites "the sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network." Consequently, on its face, *Woo* does not show the cited text of Independent Claim 26.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Madden, Mulgund, or *Woo*

describes or teaches the text of Clause [b] of Independent Claim 26. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 26 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 26 and the Examiner-cited Mulgund, Madden and Woo references are very different on their faces. *See supra* at p. 92-93 (quotation of Claim 26); at p. 95 (quotation of Mulgund); at p. 99 (quotation of Madden); and at p. 101 (quotation of Woo). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 26, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 26 either under the MPEP or under controlling legal standards. *See supra* at pp. 17-23.

As can be further seen from the foregoing, the Examiner-identified portions of Madden and Woo do not recite the text of at least Clause [b] of Independent Claim 26: “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in motes other than the at least one mote.**” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent.” And Woo recites “the sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network.” Consequently, on its face, Madden and/or Woo do not show the text of at least Clause [a] of Independent Claim 26.

Accordingly, insofar as that Madden does not recite the text of Clause [b] of Applicant’s Independent Claim 26, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [b] of Independent

Claim 26, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 26 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 26 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant's Claim 26, Applicant points out that Examiner has not provided evidence in support of Examiner's allegations as to what Madden and/or Woo "teaches." Examiner speaks of "complete TinyOS application component graph" of Madden allegedly that "facilitates routing data from child device to a parent device." Examiner's Office Action, p. 20-21 (9 December 2009). Examiner speaks of "the sensor component periodically transmits the data toward a base station over the multi hop network" of Woo. Examiner's Office Action, p. 20-21 (9 December 2009) Applicant has reviewed the Madden and the Woo reference and cannot find any recitation of an "report at least a part of a multi-mote content index stored in motes other than the at least one mote." in the mote description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what Madden "teaches" and/or should be interpreted to "teach."

With respect to Examiner assertions regarding the teachings of Madden and/or Mulgund and/or Woo, Applicant demonstrated above that the express recitations of Madden and/or Mulgund and/or Woo are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden and/or Mulgund and/or Woo "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual



express language of Applicant's Independent Claim 26. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

**(5) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund, Madden and Woo actually recites, the question thus naturally arises as to how Examiner saw Mulgund, Madden and Woo as "teaching" something related to Clause [b] of Independent Claim 26. Applicant respectfully points out that the Applicant's Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund, Madden and Woo as set forth, it follows that Examiner is interpreting Mulgund, Madden and Woo through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Mulgund, Madden and Woo are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what the cited technical material "teaches." In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable

evidence in support of Examiner's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." See, e.g., MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**c) Examiner-Suggested Modifications/Combinations to Meet the Recitations of Independent Claim 26 Are a "Mere Conclusory Statement" Without Evidentiary Support/Change the Principle of Operation of Components of Cited References/Render Such Components Unfit for Intended Purpose; No Teaching to Combine/Modify Components as a Matter of Law.**

In addition and/or in the alternative to the foregoing, Applicant additionally points out that, not only has Examiner failed to adduce any objectively verifiable evidence sufficient to support Examiner assertions regarding alleged teaching to modify/combine Mulgund and/or Madden and/or Woo to meet the recitations of Independent Claim 26, there can be no such teaching as a matter of law. Specifically, shown following is that (1) the Examiner's assertions regarding a teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Woo appear to be based on conclusory statement(s) without evidentiary support, (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Woo as suggested by Examiner in that the proposed modification/combination changes the principle of operation of one or more of the technologies; and (3) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Woo as suggested by Examiner in that such combination will render one or more of the technologies unfit for their intended purposes.

**(1) Examiner Assertions Regarding A Teaching to Modify/Combine to Meet the Recitations of Independent Claim 26 Are Based on “Mere Conclusory Statements” Without Evidentiary Support**

As explained above, the Supreme Court has stated that when an examiner attempts to establish unpatentability, the Examiner’s “*analysis should be made explicit*” ... [*and that*] rejections ... *cannot be sustained by mere conclusory statements*; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’ *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.(citations omitted)

Concerning Claim 26, as noted above, Examiner has stated as follows:

“As to claim 26, Mulgund ....

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network (section 2.1 Networking Component Stack).”

Examiner’s *Office Action*, p. 19-20 (9 December 2009).

Applicant respectfully asserts that this statement is neither evidence nor argument based upon evidence. Instead, the Examiner has attempted to support the present rejection based on this “mere conclusory statement “It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices.” Applicant accordingly requests that this statement’s rational underpinning, if any, be made explicit. As explained below, however, in this context such an underpinning could not be articulated.

**(2) Examiner-Suggested Modifications to Meet the Recitations of Independent Claim 26 Change the Principle of Operation of Components Being Modified; No Teaching to Modify/Combine Components as a Matter of Law.**

With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

**THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE**

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In *re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.” 270 F.2d at 813, 123 USPQ at 352.).

As noted above, Examiner has stated as follows:

“As to claim 26, ...

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network (section 2.1 Networking Component Stack).

Examiner’s *Office Action*, p. 19-20 (9 December 2009).

Applicant respectfully asserts that one reason for Mulgund's lack of disclosure of “said at least one multi-mote index creation agent configured to index at least a part of at least one mote-addressed content index including an index of content of other motes” may be gleaned from principles of operation indicated in this recitation:

“In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, ...”. See *Mulgund* (paragraph [0026])

Applicant respectfully points out that were one to incorporate the “aggregate” as taught by Madden or “TinyOS application component graph” as taught by Woo into the structure of Mulgund, Mulgund would no longer have a “knowledge base 18”.

Thus, the Examiner-suggested modifications/combinations would change the principle of operation of Mulgund for at least this reason.

As discussed above, one reason why such modified Mulgund technologies would be rendered unsatisfactory is that, at present, Examiner has not yet provided any teaching of how to incorporate the database structure of Madden with the Mulgund or Woo technologies to provide “[b] at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in motes other than the at least one mote.**” (Emphasis added) as recited in Independent Claim 26. Hence, in addition to the Examiner-suggested modification/composition, there would need to be some type of reconstruction and/or redesign – appropriate to the capabilities of the knowledgebase and method of Madden or Woo – to provide for the “knowledge base 18” structure of Mulgund.

As has been shown above, the technologies of Mulgund modified/combined with the technologies of Madden and/or Woo as suggested by Examiner would require “substantial reconstruction and redesign of the elements shown in [... Mulgund] as well as a change in the basic principle under which the [... Mulgund] construction was designed to operate” in order to render the Examiner-suggested combination capable of performing even a subset of the intended purposes of the technologies of Mulgund. As has also been shown, even if the Examiner-suggested combination were to be somehow hypothetically modified such that the Examiner suggested modification/composition became somewhat

workable, such a hypothetically modified version of the Examiner-suggested combination would itself require “substantial reconstruction and redesign of the [hypothetically modified] elements shown in [... Mulgund] as well as a change in the basic principle under which the [hypothetically modified] [... Mulgund] construction was designed to operate” in order to perform the intended communications. Accordingly, insofar as that the Examiner-suggested modification itself would likely require at least one additional and as-yet-hypothetical modifications as explained above, under the MPEP standards set forth in block quote above, Examiner’s suggested modification/combination “would change the principle of operation” of Mulgund’s technologies.

Insofar as that the Examiner-suggested modification/combination would itself require *substantial* hypothetical reconstruction and/or redesign to render the Examiner-suggested modification/combination capable of performing the intended purposes, under the MPEP guidelines as set forth above, the theory of operation of the technologies of Mulgund will have been changed. Consequently, under the MPEP standards as set forth above there can be no teaching to modify/combine such references to meet the recitations of Independent Claim 26 as a matter of law. Accordingly, in light of the MPEP standards for patentability, Applicant respectfully requests that the Examiner hold Independent Claim 26 patentable and issue a Notice of Allowance of Applicant’s Independent Claim 26 for at least the foregoing reasons.

**(3) Modifications to Meet the Recitations of  
Independent Claim 26 Render Components  
Being Modified Unsatisfactory for their Intended  
Purposes; No Teaching to Modify/Combine  
Components as a Matter of Law.**

Furthermore, “if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR  
ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a pet-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

As noted above, Examiner has stated as follows:

“As to claim 26, ...

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network (section 2.1 Networking Component Stack).

Examiner’s *Office Action*, p. 19-20 (9 December 2009).

Applicant again points out that the Examiner has provided no evidence to modify/combine the cited technical materials to reach the recitations of Independent Claim 26. Even assuming, *arguendo*, that Examiner had produced an as-yet-unknown objective teaching of how to modify/combine the Examiner-suggested modification/combination of the “aggregate of Madden or “TinyOS application component” of Woo with the knowledgebase of Mulgund to create “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote

reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote,” as set forth in Independent Claim 26, such a database would apparently render the technologies of Mulgund unsatisfactory for one or more of their intended purposes.

Mulgund recites, “the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18.” Mulgund at paragraph [0026]. It is unclear, at best, how these purposes can be served by a “knowledge base” of Mulgund or the TinyOS of Madden or Woo, in conjunction with recited features of Independent Claim 26. Thus, for at least this reason, the suggested modifications/combinations would render the technologies of Mulgund unsatisfactory for their intended purposes. There can thus be no teaching to modify/combine such references to meet the recitations of Independent Claim 26 as a matter of law. Accordingly, and in light of the MPEP standards for patentability as set forth above, Applicant respectfully requests that Examiner hold Applicant’s Independent Claim 26 patentable and issue a Notice of Allowance of Independent Claim 26 for at least the reasons set forth herein.

**2. Amended Dependent Claims 27-29 and 36-38: Patentable for at Least Reasons of Dependency from Independent Claim 26.**

Amended Claims 27-29 and 36-38 depend either directly or indirectly from Independent Claim 26. “A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 27-29 and 36-38 are patentable for at least the reasons why Independent Claim 26 is patentable. Accordingly, Applicant respectfully requests that Examiner hold amended Dependent Claims 27-29 and 36-38 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

**IV. REJECTION ARGUMENT: THE OFFICE ACTION ERRED IN REJECTING CLAIMS 5, 13-25, 30, 33, AND 36 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH**



The Examiner has stated Claims 5, 13-25, 30, 33, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement by containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

In response, Applicants respectfully assert herein that, under the MPEP and legal standards for patentability as set forth below, does not establish a prima facie case that Applicants' claims at issue fail to comply with the requirements of 35 U.S.C. 112. Specifically, Applicants respectfully show below that Applicants' claims at issue, comply with the enablement requirements. Accordingly, Applicants respectfully request that the Examiner withdraw the rejections and hold all claims to be allowable over the art of record.

Claim 5 recites:

5. The method of claim 1, wherein said transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes further comprises:

obtaining access to the one or more mote-addressed content indexes of the first set of motes, wherein the mote-addressed content indexes of the first set of motes comprises addresses of content stored in a memory in the first set of motes. (Emphasis added)

With respect to claim 5, the Examiner has stated,

"As to claim 5, the claim recites "the mote-addressed content indexes of the first set of motes comprises addresses of content stored in a memory in the first set of motes". Applicants failed to identify a specific portion of the specification, such as by page and line number, where the proper antecedent basis for the claimed subject matter can be found. Examiner has reviewed the specification and is unable to locate a recitation of or a proper support for indexes comprising addresses of content stored in memory."."

*Examiner's Office Action*, pp. 6-7 (9 December 2009).

Support for "addresses of content stored in a memory" is found in the specification at least on page 11, last paragraph; and page 17, first paragraph. Thus, claim 5 complies with the requirements of 35 U.S.C. 112, first paragraph.

Amended Claim 13 recites:

13. A system comprising:  
a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote.

With respect to claim 13, the Examiner has stated,

“As to claim 13, the claim has been amended to recite "an entity controlled by a second mote". Applicants failed to identify a specific portion of the specification, such as by page and line number, where the proper antecedent basis for the claimed subject matter can be found. Examiner has reviewed the specification and is unable to locate a recitation of an entity controlled by a second mote to transmit content index."”

*Examiner's Office Action*, p. 7 (9 December 2009).

Support for “a device controlled by a second mote” is found in the specification at least on page 7, first full paragraph. Thus, claims 13 complies with the requirements of 35 U.S.C. 112, first paragraph.

Amended Claim 14 recites:

14. The system of claim 13, further comprises:  
means for transmitting at least a part of at least one of a mote-addressed sensing index or a mote-addressed control index.

With respect to claims 14-24, the Examiner has stated,

“Claims 14-24 recite additional means and a reporting entity as a part of the entity of claim 13. Examiner has reviewed the specification and is unable to locate the claimed structure of the entity comprising recited means and a reporting entity.”

*Examiner's Office Action*, p. 7 (9 December 2009).

Claims 14 and claims 15-18 and 22-24 have been similarly amended by deleting the “entity” thereby rendering the rejection moot. Claims 19-21 do not recite “the claimed structure of the entity comprising recited means and a reporting entity”. Thus, claims 14-24 as presented comply with the requirements of 35 U.S.C. 112, first paragraph.

Amended Claim 25 recites:

25. A system comprising:  
a second mote; and  
means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the

transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote, and said means for transmitting being disposed proximate to said second mote.

With respect to claims 25, 30, 33, and 36, the Examiner has stated,

“As to claim 25, the claim recites "the transmitted aggregate of one or more mote addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote." Applicants failed to identify a specific portion of the specification, such as by page and line number, where the proper antecedent basis for the claimed subject matter can be found. Examiner has reviewed the specification and is unable to locate a recitation of or a proper support for indexes comprising addresses of content stored in memory.

Claims 30, 33, and 36 are rejected for analogous reasons as those discussed just above with respect to claim 25.”

*Examiner's Office Action*, p. 7 (9 December 2009).

Support for “the transmitted aggregate of one or more mote addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote” is found in the specification on page 15, first paragraph; page 16, last paragraph, page 17, third paragraph, and page 18, first paragraph. Specifically the specification discusses transmitting content index and the specification discusses that the content index may contain content indexes from two differently addressed motes. (See page 15, first paragraph; page 16, last paragraph, page 17, third paragraph, and page 18, first paragraph) Implicit in the content index is that the index excludes a content index from the mote that is transmitting.

Further page 20, second paragraph states “In some implementations, such reporting entities are computer programs that execute on processors of the motes wherein such reporting entities are resident and that transmit all or a part of indexes at their motes (e.g., mote-addressed indexes and/or multi-mote content indexes) to other entities”. Implicit in this statement is that the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excludes mote-addressed content indexes of a second mote. Thus, claim 25 (and by analogy claims 30, 33 and 36) comply with the requirements of 35 U.S.C. 112, first paragraph.

Accordingly, under the 112 standards, the Examiner has not established a *prima facie* case that pending claims 5, 13-25, 30, 33, and 36 as presented do not comply with

the requirements to distinctly claim the subject matter the applicant regards as the invention. Applicant respectfully asks Examiner to hold claims 5, 13-25, 30, 33, and 36 allowable and to issue a Notice of Allowance of same.

**V. REJECTION OF CLAIMS 39-42 UNDER 35 U.S.C. §112, SECOND PARAGRAPH**

The Examiner rejected Claims 39-42 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appellant traverses this rejection, and respectfully requests that the Examiner withdraw his rejection of claims 39-42 under 35 U.S.C. §112, second paragraph.

**1. Claims 39-42**

Claims 39-42 recite:

39. The method of Claim 2, wherein transmitting at least a part of at least one of a mote-addressed sensing index or a mote-addressed control index further comprises:

transmitting a query command format of a sensing device and transmitting an output format of information of the sensing device.

40. The method of Claim 2, wherein transmitting at least a part of at least one of a mote-addressed sensing index or a mote-addressed control index further comprises:

transmitting a query command format of a sensing device coupled with at least one of the first set of motes or transmitting an output format of information of the sensing device.

41. The method of Claim 2, wherein transmitting at least a part of at least one of a mote-addressed sensing index or a mote-addressed control index further comprises:

transmitting a control command format of a sensing device and transmitting a feedback format of information of the sensing device.

42. The method of Claim 2, wherein transmitting at least a part of at least one of a mote-addressed sensing index or a mote-addressed control index further comprises:

transmitting a control command format of a sensing device coupled with at least one of the first set of motes or transmitting a feedback format of information of the sensing device.

With respect to claims 39-42, the Examiner has stated,

“As to claims 39-42, it is unclear as what is being meant by "a query command format", "control command format", and "a feedback format", such that the Examiner is unable to correctly interpret these limitations and properly apply prior art references. Review of the specification provided no recitation of these limitations and what they are deemed to be. The only support for these limitations is in the drawings. However, drawings do not provide sufficient disclosure to determine what constitutes "a query command format", "control command format", and "a feedback format".”

*Examiner's Office Action*, p. 8 (9 December 2009).

Applicant submits that the specification including the drawings provides support for "a query command format", "control command format", and "a feedback format" (“indicated terms”). The examiner states that the claims are unclear because he is unable to correctly interpret these limitations and cannot properly apply prior art references.

However, with respect to interpreting a claim at issue, the MPEP directs that, during examination, such claim be interpreted as broadly as the claim terms would reasonably allow when read by one skilled in the art with which the claimed invention is most closely connected. In practice, this is achieved by giving each of the terms in the claim the “plain meaning” of the terms as such would be understood by those having ordinary skill in the art, and if portions of the claim have no “plain meaning” within the art, or are ambiguous as used in a claim, then the examiner is to consult the specification for clarification. *MPEP* § 2111.

Applicant submits when the indicated terms are given their plain meaning in view of the drawings/specification, the indicated terms would be understood by those having ordinary skill in the art.

Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion that there is no plain meaning of the indicated terms. In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding the lack of

plain meaning for the indicated terms. As the plain meaning indicated terms would be understood by one of skill in the art, Appellant respectfully requests that the Examiner's withdraw his rejection of claims 39-42 under 35 U.S.C. §112, second paragraph.

## **VI. CONCLUSION**

Applicant may have during the course of prosecution cancelled and/or amended one or more claims. Applicant notes that any such cancellations and/or amendments will have transpired (i) prior to issuance and (ii) in the context of the rules that govern claim interpretation during prosecution before the United States Patent and Trademark Office (USPTO). Applicant notes that the rules that govern claim interpretation during prosecution form a radically different context than the rules that govern claim interpretation subsequent to a patent issuing. Accordingly, Applicant respectfully submits that any cancellations and/or amendments during the course of prosecution should be held to be tangential to and/or unrelated to patentability in the event that such cancellations and/or amendments are viewed in a post-issuance context under post-issuance claim interpretation rules.

Insofar as that the Applicant may have during the course of prosecution cancelled/amended claims sufficient to obtain a Notice of Allowability of all claims pending, Applicant may not have during the course of prosecution explicitly addressed all rejections and/or statements in Examiner's Office Actions. The fact that rejections and/or statements may not be explicitly addressed during the course of prosecution should NOT be taken as an admission of any sort, and Applicant hereby reserves any and all rights to contest such rejections and/or statements at a later time. Specifically, no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended (e.g., with respect to any facts of which Examiner took Official Notice, and/or for which Examiner has supplied no objective showing, Applicant hereby contests those facts and requests express documentary proof of such facts at such time at which such facts may become relevant). For example, although not expressly set forth during the course of prosecution, Applicant continues to assert all points of (e.g. caused by, resulting from, responsive to, etc.) any previous Office Action, and no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended. Specifically, insofar as that Applicant does not consider the

cancelled/unamended claims to be unpatentable, Applicant hereby gives notice that it may intend to file and/or has filed a continuing application in order prosecute such cancelled/unamended claims.

Should this case go to appeal, Applicant reserves the right to submit argument, rebuttal evidence, or legal authority in the instance the Board of Patent Appeals and Interferences finds that the Examiner has met his burden in establishing a *prima facie* case of unpatentability of the various appealed claims. Applicant further reserves the right to submit argument, rebuttal evidence, or legal authority if new claim interpretations or definitional citations are raised on appeal. The fact that argument, rebuttal evidence, or legal authority may not have been explicitly discussed during the course of prosecution should NOT be taken as an admission or waiver of any sort, and Applicant hereby reserves any and all rights to discuss (e.g. make explicit, produce, or explain) such rebuttal evidence at a later time.

The Examiner is encouraged to contact the undersigned by telephone at 206-321-9072 to discuss the above and any other distinctions between the claims and the applied references, if desired. Also, if the Examiner notes any informalities in the claims, he is encouraged to contact the undersigned to expediently correct such informalities.

Respectfully submitted,

/Steven Stewart, Reg. No. 33,555/  
Steven Stewart  
Registration No. 33,555